Modal Relational Type Theory in Isabelle/HOL

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Abstract

We present an attempt to formalize modal relational type theory in functional type theory. This formalization has been motivated to serve as a possible starting point for the subsequent modeling of Zalta's theory of abstract objects, which provides an axiomatic foundation for metaphysics.

1 Introduction

The principia metaphysica project[1] [7] at Stanford University aims at providing an encompassing axiomatic foundation for metaphysics, mathematics and the sciences. The starting point is Zalta's theory of abstract objects [8] — a metaphysical theory providing a systematic description of fundamental and complex abstract objects. This theory provides is at heart of Zalta's ongoing 'principia metaphysica' project.

The theory of abstract objects utilizes a modal relational type theory (MRTT) as logical foundation. Arguments defending this choice against a modal functional type theory (MFTT) have been presented before [10]. In a nutshell, the situation is this: functional type theory comes with strong comprehension principles, which, in the context of the theory of abstract objects, have paradoxical implications [10, chap.4]. When starting off with a relational foundation, however, weaker comprehension principles are provided, and these obstacles can be avoided.

Isabelle/HOL is a proof assistant based on a functional type theory extending Church's theory of types [5], and recently it has been shown that Church's type theory can be elegantly utilized as a meta-logic to semantically embed and automate various quantified non-classical logics, including MFTT [2, 3]. This embedding of MFTT has subsequently been employed in a case study in computational metaphysics, in which different variants of Kurt Gödel's ontological argument were verified resp. falsified [3, 4].

In this paper we explore an idea to encode, respectively embed, MRTT in functional type theory. Thereby, we want adapt and extend ideas from the previous, successful embedding of MFTT in functional type theory. Our contribution here shall serve as possible starting point for the subsequent formalization of further chapters of the theory of abstract objects and the principia metaphysica – as far as this is possible considering the technical challenges we report below.

The motivating research questions for the formalisation presented below include:

[1] Cf. https://mally.stanford.edu/principia/principia.html

- Can functional type theory, despite the problems as pointed out by Zalta and Oppenheimer [10], nevertheless be utilized to encode MRTT and subsequently the theory of abstract objects when adapting and utilizing the embeddings approach?
- From another perspective we are interested in studying options to restrict comprehension in functional type theory when utilizing the embedding approach.
- From a pragmatic point of view, we want to assess the user-friendliness of the proposed solution? To what extend can Isabelle's user interface hide unpleasant technicalities of the extended embedding from the user?
- How far can automation be pushed in the approach? For this note that proof automation worked well for the simpler embeddings as utilized in previous work [3, 4].

In this paper we focus mainly on the presentation of the embedding of MRTT in functional type theory. Some technical difficulties will be highlighted. However, a proper exploration and discussion of the above questions is left as further work.

The formalization idea we explore below is to adapt and extend the previous encoding of MFTT in functional type theory. The basic idea of this encoding is simple: modal logic formulas are identified with certain functional type theory formulas of predicate type $i \Rightarrow bool$ (abbreviated as io below). Possible worlds are explicitly represented as terms of type i. A modal logic formula φ holds for a world w if and only if the application $(\varphi\ w)$ evaluates to true. The definitions of the propositional modal logic connectives are straightforward. These definitions realize the well known standard translation as a set of equations in functional type theory and they successfully extend the standard translation also for quantifiers. An important aspect thereby is that quantifiers can be handled just as ordinary logical connectives. No binding mechanisms are needed, since the binding mechanism for lambda-abstractions can be fruitfully utilised.

The challenge for the work presented here has been to suitably 'restrict' this embedding for MRTT (instead of MFTT). However, as we will see, this restriction is achieved below by introducing a technically involved additional layer in the embedding; this additional layer provides means to annotate formulas and terms with grammatical information.

The grammar of the second-order fragment of MRTT is presented in Figure 1; detailed descriptions of MRTT are available in the literature (see e.g. the appendix of [9]).

Note that this grammar successfully excludes terms such as $(\lambda x \exists F.xF \wedge \neg Fx)$, where Fx represents exemplification of property F by x and xF stands for the encoding of property F by x. It are such kind of lambda-abstractions which lead to paradoxical situations in the theory of abstract objects [10, chap.4].

To achieve our goal we provide means to explicitly represent, maintain and propagate information on the syntactical structure of MRTT in functional type theory. In particular, we provide means in form of annotations to explicitly distinguish between propositional formulas, formulas, terms and erroneous (ineligible/excluded) formations. Respective annotation information is propagated from the innermost constituents to the top level constructions. This creates some non-trivial technical overhead. However, due to Isabelle/HOL's user interface these technicalities can be hidden from the user (to some extend).

A note on using abbreviations versus definitions in our approach: We are aware that abbreviations should be used sparsingly in Isabelle/HOL; they are automatically expanded and

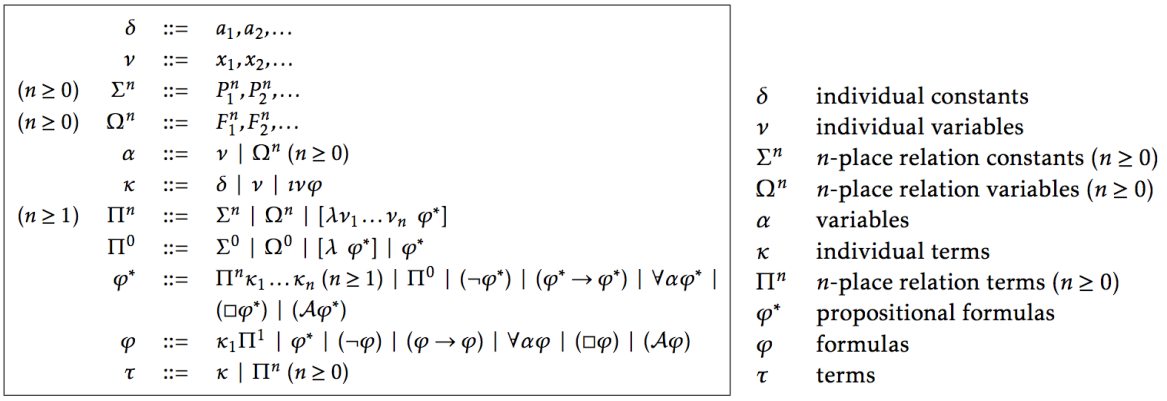

Figure 1: Grammar of the second-order fragment of MRTT, cf. [7] for further details. Two kinds of (complex) formulas are introduced: the φ-formulas may have encoding subformulas, while the φ^*-formulas must not. The latter are designated as propositional formulas, the former ones simply as formulas.

thus lead to a discrepancy between the internal and the external view of a term. However, we here deliberately deviate from this rule, since one aspect of the paper is to particularly illustrate exactly this discrepancy and to emphasize the complexity of the embedding MRTT in functional type theory.[2]

In fact, as we believe, the technical complexity of the embedding presented below pen and paper work with it pragmatically infeasible. In this sense, we agree with previous findings [10].

On the other hand, we illustrate the feasibility of maintaining and propagating grammatical information in connection with a shallow embedding approach. Remember, that one central aim has been to suitably restrict the comprehension principles for the embedded MRTT despite the fact that underlying functional type theory comes with full comprehension principles.

Our hope has been that the proposed approach can eventually be pragmatically handled to at least some modest degree in a modern proof assistant such as Isabelle/HOL. In fact, as we will also illustrate, the simplifier *simp* of Isabelle is indeed well capable of effectively reducing the technically inflated terms we obtain from the extended embedding to its logical core content. In other words, Isabelle's simplifier effectievely analyses and and rewrites the deeply annotated terms and propagates the annotation information as intended to top-level. It thus seems feasable, to some degree, to seperate the rasoning about annotations from the reasoning about logical content within our shallow embedding approach.

2 Preliminaries

We start out with some type declarations and type abbreviations. Remember that our formalism explicitly encodes possible world semantics. Hence, we introduce a distinguished type

[2] We have also experimented with using definitions instead of abbreviations; respective encoding fragments can be requested from the first author.

i to represent the set of possible worlds. Consequently, terms of this type denote possible worlds. Moreover, modal logic formulas are associated in our approach with predicates on (resp. sets of) on possible worlds. Hence, modal logic formulas have type $(i \Rightarrow bool)$. To make our representation more concise in the remainder we abbreviate this type as io.

typedecl i
type-synonym $io = (i \Rightarrow bool)$

Entities in the abstract theory of types are represented in our formalism by the type e. We call this the raw type of entities resp. objects. The Theory of Abstract Objects later introduces means to distinguish between abstract and ordinary entities.

typedecl e

To explicitly model the syntactical restrictions of MRTT we introduce a (polymorphic) datatype $'a\ opt$ ($'a$ is a type variable) based on four constructors: $ERR\ 'a$ (identifies ineligible/excluded constructions), $P\ 'a$ (identifies propositional formulas), $F\ 'a$ (identifies formulas), and $T\ 'a$ (identifies eligible terms, such as constants and lambda abstractions). The embedding approach (of MFTT in functional type theory) is suitably adapted below so that for each language expression (in the embedded MRTT) the respective datatype is identified and appropriately propagated. The encapsulated expressions correspond to the previous embedding of MRTT in functional type theory [2, 3].

datatype $'a\ opt = ERR\ 'a \mid P\ 'a \mid F\ 'a \mid T\ 'a$

The following operators support a concise and elegant superscript annotation with these four syntactical categories for our language constructs.

abbreviation $mkP::io \Rightarrow io\ opt\ (\text{-}^P\ [109]\ 110)$ **where** $\varphi^P \equiv P\ \varphi$
abbreviation $mkF::io \Rightarrow io\ opt\ (\text{-}^F\ [109]\ 110)$ **where** $\varphi^F \equiv F\ \varphi$
abbreviation $mkT::'a \Rightarrow 'a\ opt\ (\text{-}^T\ [109]\ 110)$ **where** $\varphi^T \equiv T\ \varphi$
abbreviation $mkE::'a \Rightarrow 'a\ opt\ (\text{-}^E\ [109]\ 110)$ **where** $\varphi^E \equiv ERR\ \varphi$

Certain language constructs in the Theory of Abstract objects, such as the actuality operator $\mathcal{A}$ ("it is actually the case that"), refer to a (fixed) designated world. To model such a rigid dependence we introduce a constant symbol (name) dw of world type i. Moreover, for technical reasons, which will be clarified below, we introduce a polymorphic (dummy) constant symbol $da::'a$ for the various other domains. We anyway assume that all domains are non-empty. Hence, introducing $da::'a$ is obviously not harmful.

consts $dw::i\ da::'a$

3 Embedding of Modal Relational Type Theory

The various language constructs of MRTT (see Figure 1) are now introduced step by step.

The actuality operator $\mathcal{A}$, when being applied to a formula or propositional formula φ, evaluates φ wrt the fixed given world dw. The compound expression $\mathcal{A}\varphi$ inherits its syntactical category F (formula) or P (propositional formula) from φ. If the syntactical category of φ is ERR (error) or T (term), then the syntactical category of $\mathcal{A}\varphi$ is ERR and a dummy entity of appropriate type is returned. This illustrates the core ideas of our explicit modeling of MRTT grammatical structure in functional type theory. This scheme will repeated below for all the other language constructs of MRTT.

abbreviation *Actual*::*io opt* ⇒ *io opt* (**𝓐** - [*64*] *65*) **where** **𝓐**$\varphi \equiv$ *case* φ *of*
$F(\psi) \Rightarrow F(\lambda w.\ \psi\ dw)$ |
$P(\psi) \Rightarrow P(\lambda w.\ \psi\ dw)$ |
- ⇒ *ERR*(*da*)

The Theory of Abstract Objects distinguishes between encoding properties $\kappa_1\Pi^1$ and exemplifying properties $\Pi^n,\kappa_1,..,\kappa_n$ (for $n \geq 1$).

Encoding $\kappa\Pi$ is noted below as $\{\!|\kappa,\Pi|\!\}$. Encoding yields formulas and never propositional formulas. Below we map it to predicate application $\Pi(\kappa)$ which we then guard by an uninterpreted constant symbol *enc*, that is we map $\{\!|\kappa,\Pi|\!\}$ to (*enc* $\Pi(\kappa)$) (note that entire expression denotes a predicate on possible worlds). This way we obtain only some limited amount of lambda conversion principles for encoding from the underlying meta-logic. Additional axioms maybe required to obtain further required reasoning principles. Exemplification is be noted below as $(\!|\Pi,x|\!)$ (respectively, $(\!|\Pi,x,...|\!)$). It is mapped to predicate application below, that is, to $\Pi(\kappa)$. This way lambda conversion principles are inherited from the underlying meta-logic (see Section **??** for some tests). We cannot map both, encoding and exemplification, to unguarded predicate application in the meta-logic, since this would conflate both notions and allow us to prove statements such as $\{\!|\kappa,\Pi|\!\} \rightarrow (\!|\Pi,x|\!)$.

consts *enc*::*io*⇒*io*

abbreviation *Enc*::*e opt*⇒(*e*⇒*io*) *opt*⇒*io opt* ({|-,-|}) **where** $\{\!|x,\Phi|\!\} \equiv$ *case* (x,Φ) *of*
$(T(y),T(Q)) \Rightarrow F((enc\ (Q\ y)))$ |
- ⇒ *ERR*(*da*)

We add some exemplary axioms to support reasoning with encodings. Future work will be to study and add further principles.

axiomatization where *encAxiom1*: $(enc\ x) \equiv enc\ (\lambda w.\ (enc\ x\ w))$
axiomatization where *encAxiom2*: $(\lambda w.\ \neg(enc\ x\ w)) \equiv enc\ (\lambda w.\ \neg(x\ w))$

Unary exemplifying formulas $\Pi\kappa$ are noted as $(\!|\Pi,\kappa|\!)$. Exemplification yields propositional formulas. It is mapped to unguarded predicate application.

abbreviation *Exe1*::(*e*⇒*io*) *opt*⇒*e opt*⇒*io opt* ((|-,-|)) **where** $(\!|\Phi,x|\!) \equiv$ *case* (Φ,x) *of*
$(T(Q),T(y)) \Rightarrow P((Q\ y))$ |
- ⇒ *ERR*(*da*)

For pragmatical reasons we support n-ary exemplification formulas $\Pi^n,\kappa_1,..,\kappa_n$ here only for $1 \leq n \leq 3$. In addition to the unary case above, we thus introduce two further cases.

abbreviation *Exe2*::(*e*⇒*e*⇒*io*) *opt*⇒*e opt*⇒*e opt*⇒*io opt* ((|-,-,-|))
where $(\!|\Phi,x1,x2|\!) \equiv$ *case* $(\Phi,x1,x2)$ *of*
$(T(Q),T(y1),T(y2)) \Rightarrow P((Q\ y1\ y2))$ |
- ⇒ *ERR*(*da*)
abbreviation *Exe3*::(*e*⇒*e*⇒*e*⇒*io*) *opt*⇒*e opt*⇒*e opt*⇒*e opt*⇒*io opt* ((|-,-,-,-|))
where $(\!|\Phi,x1,x2,x3|\!) \equiv$ *case* $(\Phi,x1,x2,x3)$ *of*
$(T(Q),T(y1),T(y2),T(y3)) \Rightarrow P((Q\ y1\ y2\ y3))$ |
- ⇒ *ERR*(*da*)

Formations with negation and implication are supported for both, formulas and propositional formulas, and their embeddings are straightforward. In the case of implication, the compound formula is a propositional formula if both constituents are propositional formulas. If at least

one constituent is a formula and the other one eligible, then the compound formula is a formula. In all other cases an ERR-Formula is returned.

abbreviation *not*::*io opt*⇒*io opt* (¬ - [*58*] *59*) **where** ¬ $\varphi \equiv$ *case* φ *of*
$F(\psi) \Rightarrow F(\lambda w.\neg(\psi\ w))$ |
$P(\psi) \Rightarrow P(\lambda w.\neg(\psi\ w))$ |
- ⇒ *ERR*(*da*)
abbreviation *implies*::*io opt*⇒*io opt*⇒*io opt* (**infixl** → *51*) **where** $\varphi \rightarrow \psi \equiv$ *case* (φ,ψ) *of*
$(P(\alpha),P(\beta)) \Rightarrow P(\lambda w.\ \alpha\ w \longrightarrow \beta\ w)$ |
$(F(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longrightarrow \beta\ w)$ |
$(P(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longrightarrow \beta\ w)$ |
$(F(\alpha),P(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longrightarrow \beta\ w)$ |
- ⇒ *ERR*(*da*)

Also universal quantification $\forall\,(\lambda x.\varphi)$ (first-order and higher-order) is supported for both, formulas and propositional formulas. Following previous work, the embedding maps $\forall\,(\lambda x.\varphi)$ to $(\lambda w.\forall\,x.\varphi w)$, where the latter $\forall$ is the universal quantifier from the HOL meta-logic. Note that $\forall$ is introduced as logical connective based on the existing λ-binder. To improve the presentation and enable intuitive use in the remainder we additionally introduce the binder notation $\forall\,x.\varphi$ as syntactic sugar for $\forall\,(\lambda x.\varphi)$.

abbreviation *forall*::(*'a*⇒*io opt*)⇒*io opt* (∀) **where** ∀ $\Phi \equiv$ *case* $(\Phi\ da)$ *of*
$F(\text{-}) \Rightarrow F(\lambda w.\forall\,x.\ case\ (\Phi\ x)\ of\ F(\psi) \Rightarrow \psi\ w)$ |
$P(\text{-}) \Rightarrow P(\lambda w.\forall\,x.\ case\ (\Phi\ x)\ of\ P(\psi) \Rightarrow \psi\ w)$ |
- ⇒ *ERR*(*da*)
abbreviation *forallBinder*::(*'a*⇒*io opt*)⇒*io opt* (**binder** ∀ [*8*] *9*) **where** ∀ $x.\ \varphi\ x \equiv \forall\,\varphi$

The modal □-operator is introduced here for logic S5. Since in an equivalence class of possible worlds each world is reachable from any other world, the guarding accessibility clause in the usual definition of the □-operator can be omitted. This is convenient and also improves the efficience of theorem provers, cf. [4]. In Section 7.4 we will actually demonstrate that the expected S5 properties are validated by our modeling of □. The □-operator can be applied to formulas and propositional formulas.

abbreviation *box*::*io opt*⇒*io opt* (□- [*62*] *63*) **where** □$\varphi \equiv$ *case* φ *of*
$F(\psi) \Rightarrow F(\lambda w.\forall\,v.\ \psi\ v)$ |
$P(\psi) \Rightarrow P(\lambda w.\forall\,v.\ \psi\ v)$ |
- ⇒ *ERR*(*da*)

n-ary lambda abstraction $\boldsymbol{\lambda}^0$,$\boldsymbol{\lambda}$,$\boldsymbol{\lambda}^2$,$\boldsymbol{\lambda}^3$,..., for $n \geq 0$, is supported in the theory of abstract objects only for propositional formulas. This way constructs such as beforehand mentioned $(\lambda x\exists F.xF \wedge \neg Fx)$ (noted here as $(\boldsymbol{\lambda}x.\ \exists\,F.\ \{\!|x^T,F^T|\!\} \wedge \neg(|F^T,x^T|)$) are excluded. More precisely, they are identified as *ERR*-annotated terms in our framework. The embedding of lambda abstraction is straightforward: $\boldsymbol{\lambda}^0$ is mapped to identity and $\boldsymbol{\lambda}$,$\boldsymbol{\lambda}^2$,$\boldsymbol{\lambda}^3$,... are mapped to n-ary lambda abstractions, that is, $\boldsymbol{\lambda}(\lambda x.\varphi)$ is mapped to $(\lambda x.\varphi)$ and $\boldsymbol{\lambda}^2(\lambda xy.\varphi)$ to $(\lambda xy.\varphi)$, etc. Similar to before, we support only the cases for $n \leq 3$. Binder notation is introduced for $\boldsymbol{\lambda}$.[3].

abbreviation *lam0*::*io opt*⇒*io opt* ($\boldsymbol{\lambda}^0$) **where** $\boldsymbol{\lambda}^0\varphi \equiv$ *case* φ *of*
$P(\psi) \Rightarrow P(\psi)$ |
- ⇒ *ERR da*

[3]Unfortunately, we could not find out how binder notation could be analogously provided in Isabelle for $\boldsymbol{\lambda}^2$ and $\boldsymbol{\lambda}^3$.

abbreviation *lam*::$(e \Rightarrow io\ opt) \Rightarrow (e \Rightarrow io)\ opt$ $(\boldsymbol{\lambda})$ **where** $\boldsymbol{\lambda}\Phi \equiv case\ (\Phi\ da)\ of$
$P(\text{-}) \Rightarrow T(\lambda x.\ case\ (\Phi\ x)\ of\ P(\varphi) \Rightarrow \varphi)\ |$
$\text{-} \Rightarrow ERR(\lambda x.\ da)$
abbreviation *lamBinder*::$(e \Rightarrow io\ opt) \Rightarrow (e \Rightarrow io)\ opt$ (**binder** $\boldsymbol{\lambda}$ [8] 9) **where** $\boldsymbol{\lambda}x.\ \varphi\ x \equiv \boldsymbol{\lambda}\ \varphi$
abbreviation *lam2*::$(e \Rightarrow e \Rightarrow io\ opt) \Rightarrow (e \Rightarrow e \Rightarrow io)\ opt$ $(\boldsymbol{\lambda}^2)$ **where** $\boldsymbol{\lambda}^2\Phi \equiv case\ (\Phi\ da\ da)\ of$
$P(\text{-}) \Rightarrow T(\lambda x\ y.\ case\ (\Phi\ x\ y)\ of\ P(\varphi) \Rightarrow \varphi)\ |$
$\text{-} \Rightarrow ERR(\lambda x\ y.\ da)$
abbreviation *lam3*::$(e \Rightarrow e \Rightarrow e \Rightarrow io\ opt) \Rightarrow (e \Rightarrow e \Rightarrow e \Rightarrow io)\ opt$ $(\boldsymbol{\lambda}^3)$ **where** $\boldsymbol{\lambda}^3\Phi \equiv case\ (\Phi\ da\ da\ da)$ *of*
$P(\text{-}) \Rightarrow T(\lambda x\ y\ z.\ case\ (\Phi\ x\ y\ z)\ of\ P(\varphi) \Rightarrow \varphi)\ |$
$\text{-} \Rightarrow ERR(\lambda x\ y\ z.\ da)$

The theory of abstract objects supports rigid definite descriptions. Our definition maps $\boldsymbol{\iota}(\lambda x.\varphi)$ to $(THE\ x.\ \varphi\ dw)$, that is, Isabelle's inbuilt definite description operator *THE* is utilized and evaluation is rigidly carried out with respect to the current world denoted by *dw*. We again introduce binder notation for $\boldsymbol{\iota}$.

abbreviation *that*::$(e \Rightarrow io\ opt) \Rightarrow e\ opt$ $(\boldsymbol{\iota})$ **where** $\boldsymbol{\iota}\Phi \equiv case\ (\Phi\ da)\ of$
$F(\text{-}) \Rightarrow T(THE\ x.\ case\ (\Phi\ x)\ of\ F\ \psi \Rightarrow \psi\ dw)\ |$
$P(\text{-}) \Rightarrow T(THE\ x.\ case\ (\Phi\ x)\ of\ P\ \psi \Rightarrow \psi\ dw)\ |$
$\text{-} \Rightarrow ERR(da)$
abbreviation *thatBinder*::$(e \Rightarrow io\ opt) \Rightarrow e\ opt$ (**binder** $\boldsymbol{\iota}$ [8] 9) **where** $\boldsymbol{\iota}x.\ \varphi\ x \equiv \boldsymbol{\iota}\ \varphi$

4 Further Logical Connectives

Further logical connectives can be defined as usual. For pragmatic reasons (e.g. to avoid further blow-up of abbreviation expansions) we prefer direct definitions in all cases.

abbreviation *conj*::$io\ opt \Rightarrow io\ opt \Rightarrow io\ opt$ (**infixl** $\wedge$ 53) **where** $\varphi \wedge \psi \equiv case\ (\varphi,\psi)\ of$
$(P(\alpha),P(\beta)) \Rightarrow P(\lambda w.\ \alpha\ w \wedge \beta\ w)\ |\ (F(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \wedge \beta\ w)\ |$
$(P(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \wedge \beta\ w)\ |\ (F(\alpha),P(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \wedge \beta\ w)\ |$
$\text{-} \Rightarrow ERR(da)$

abbreviation *disj*::$io\ opt \Rightarrow io\ opt \Rightarrow io\ opt$ (**infixl** $\vee$ 52) **where** $\varphi \vee \psi \equiv case\ (\varphi,\psi)\ of$
$(P(\alpha),P(\beta)) \Rightarrow P(\lambda w.\ \alpha\ w \vee \beta\ w)\ |\ (F(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \vee \beta\ w)\ |$
$(P(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \vee \beta\ w)\ |\ (F(\alpha),P(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \vee \beta\ w)\ |$
$\text{-} \Rightarrow ERR(da)$

abbreviation *equiv*::$io\ opt \Rightarrow io\ opt \Rightarrow io\ opt$ (**infixl** $\equiv$ 51) **where** $\varphi \equiv \psi \equiv case\ (\varphi,\psi)\ of$
$(P(\alpha),P(\beta)) \Rightarrow P(\lambda w.\ \alpha\ w \longleftrightarrow \beta\ w)\ |\ (F(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longleftrightarrow \beta\ w)\ |$
$(P(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longleftrightarrow \beta\ w)\ |\ (F(\alpha),P(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longleftrightarrow \beta\ w)\ |$
$\text{-} \Rightarrow ERR(da)$

abbreviation *diamond*::$io\ opt \Rightarrow io\ opt$ $(\Diamond\ \text{-}\ [62]\ 63)$ **where** $\Diamond\varphi \equiv case\ \varphi\ of$
$F(\psi) \Rightarrow F(\lambda w.\exists v.\ \psi\ v)\ |$
$P(\psi) \Rightarrow P(\lambda w.\exists v.\ \psi\ v)\ |$
$\text{-} \Rightarrow ERR(da)$

abbreviation *exists*::$('a \Rightarrow io\ opt) \Rightarrow io\ opt$ $(\exists)$ **where** $\exists\,\Phi \equiv case\ (\Phi\ da)\ of$
$P(\text{-}) \Rightarrow P(\lambda w.\exists x.\ case\ (\Phi\ x)\ of\ P\ \psi \Rightarrow \psi\ w)\ |$
$F(\text{-}) \Rightarrow F(\lambda w.\ \exists x.\ case\ (\Phi\ x)\ of\ F\ \psi \Rightarrow \psi\ w)\ |$
$\text{-} \Rightarrow ERR\ da$
abbreviation *existsBinder*::$('a \Rightarrow io\ opt) \Rightarrow io\ opt$ (**binder** $\exists$ [8] 9) **where** $\exists x.\ \varphi\ x \equiv \exists\,\varphi$

5 E!, O!, A! and =E

We introduce some important further notions of the theory of abstract objects [8]. We start out with the distinguished 1-place relation constant $E!$ (read being concrete or concreteness).

consts *Exists*::$(e \Rightarrow io)$ $(E!)$

Next, being ordinary is defined as being possibly concrete.

abbreviation *ordinaryObject*::$(e \Rightarrow io)$ *opt* $(O!)$ **where** $O! \equiv \boldsymbol{\lambda} x.\ \Diamond(\!|E!^T,x^T|\!)$

Being abstract is then defined as not possibly being concrete.

abbreviation *abstractObject*::$(e \Rightarrow io)$ *opt* $(A!)$ **where** $A! \equiv \boldsymbol{\lambda} x.\ \neg(\Diamond(\!|E!^T,x^T|\!))$

Finally, we introduce the identity relations $=_E$ and $=$ on individuals.

abbreviation *identityE*::*e opt*$\Rightarrow$*e opt*$\Rightarrow$*io opt* $(\textbf{infixl}\ =_E\ 63)$ **where** $x =_E y \equiv$
$(\!|O!,x|\!) \wedge (\!|O!,y|\!) \wedge \Box(\forall F.\ (\!|F^T,x|\!) \equiv (\!|F^T,y|\!))$

abbreviation *identityI*::*e opt*$\Rightarrow$*e opt*$\Rightarrow$*io opt* $(\textbf{infixl}\ =\ 63)$ **where** $x = y \equiv$
$x =_E y \vee ((\!|A!,x|\!) \wedge (\!|A!,y|\!) \wedge \Box(\forall F.\ \{\!|x,F^T|\!\} \equiv \{\!|y,F^T|\!\}))$

Moreover, we introduce the following identity relations on n-ary relations (for $n = 0, 1, 2, 3$).

abbreviation *identityRel1*:: $((e \Rightarrow io)\ opt) \Rightarrow ((e \Rightarrow io)\ opt) \Rightarrow io\ opt$ $(\textbf{infixl}\ =^1\ 63)$
where $F1 =^1 G1 \equiv \Box(\forall x.\ \{\!|x^T,F1|\!\} \equiv \{\!|x^T,G1|\!\})$

abbreviation *identityRel2*:: $((e \Rightarrow e \Rightarrow io)\ opt) \Rightarrow ((e \Rightarrow e \Rightarrow io)\ opt) \Rightarrow io\ opt$ $(\textbf{infixl}\ =^2\ 63)$
where $F2 =^2 G2 \equiv \forall x1.(\ \ (\boldsymbol{\lambda} y.(\!|F2,y^T,x1^T|\!)) =^1 (\boldsymbol{\lambda} y.(\!|G2,y^T,x1^T|\!))$
$\wedge\ (\boldsymbol{\lambda} y.(\!|F2,x1^T,y^T|\!)) =^1 (\boldsymbol{\lambda} y.(\!|G2,x1^T,y^T|\!)))$

abbreviation *identityRel3*:: $((e \Rightarrow e \Rightarrow e \Rightarrow io)\ opt) \Rightarrow ((e \Rightarrow e \Rightarrow e \Rightarrow io)\ opt) \Rightarrow io\ opt$ $(\textbf{infixl}\ =^3\ 63)$
where $F3 =^3 G3 \equiv \forall x1\ x2.(\ \ (\boldsymbol{\lambda} y.(\!|F3,y^T,x1^T,x2^T|\!)) =^1 (\boldsymbol{\lambda} y.(\!|G3,y^T,x1^T,x2^T|\!))$
$\wedge\ (\boldsymbol{\lambda} y.(\!|F3,x1^T,y^T,x2^T|\!)) =^1 (\boldsymbol{\lambda} y.(\!|G3,x1^T,y^T,x2^T|\!))$
$\wedge\ (\boldsymbol{\lambda} y.(\!|F3,x1^T,x2^T,y^T|\!)) =^1 (\boldsymbol{\lambda} y.(\!|G3,x1^T,x2^T,y^T|\!)))$

abbreviation *equalityRel0*::*io opt*$\Rightarrow$*io opt*$\Rightarrow$*io opt* $(\textbf{infixl}\ =^0\ 63)$
where $F0 =^0 G0 \equiv (\boldsymbol{\lambda} y{::}e\ .\ F0) =^1 (\boldsymbol{\lambda} y.\ G0)$

6 Three-Valued Meta-Logic

Our approach to rigorously distinguish between proper and improper language constructions and to explicitly maintain respective information is continued also at meta-level. For this we introduce three truth values *tt*, *ff* and *err*, representing truth, falsity and error. These values are also noted as $\top$, $\bot$ and $*$. We could, of course, also introduce respective logical connectives for the meta-level, but in our applications (see below) this was not yet required.

datatype *mf* = *tt* $(\top)$ | *ff* $(\bot)$ | *err* $(*)$

Next we define the meta-logical notions of validity, satisfiability, countersatisfiability and invalidity for our embedded modal relational type theory. Moreover, we introduce the following notations: $[\varphi]$ (for φ is valid), $[\varphi]^{sat}$ (φ is satisfiability), $[\varphi]^{csat}$ (φ is countersatisfiability) and $[\varphi]^{inv}$ (φ is invalid). Actually, so far we only use validity.

abbreviation *valid* :: *io opt*$\Rightarrow$*mf* ([-] [*1*]) **where** $[\varphi] \equiv$ *case* φ *of*

$P(\psi) \Rightarrow$ *if* $\forall\, w.(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
$F(\psi) \Rightarrow$ *if* $\forall\, w.(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
- $\Rightarrow *$

abbreviation *satisfiable* :: *io opt⇒mf* ($[\text{-}]^{sat}$ [*1*]) **where** $[\varphi]^{sat} \equiv$ *case* φ *of*
$P(\psi) \Rightarrow$ *if* $\exists\, w.(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
$F(\psi) \Rightarrow$ *if* $\exists\, w.(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
- $\Rightarrow *$

abbreviation *countersatisfiable* :: *io opt⇒mf* ($[\text{-}]^{csat}$ [*1*]) **where** $[\varphi]^{csat} \equiv$ *case* φ *of*
$P(\psi) \Rightarrow$ *if* $\exists\, w.\neg(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
$F(\psi) \Rightarrow$ *if* $\exists\, w.\neg(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
- $\Rightarrow *$

abbreviation *invalid* :: *io opt⇒mf* ($[\text{-}]^{inv}$ [*1*]) **where** $[\varphi]^{inv} \equiv$ *case* φ *of*
$P(\psi) \Rightarrow$ *if* $\forall\, w.\neg(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
$F(\psi) \Rightarrow$ *if* $\forall\, w.\neg(\psi\ w) \longleftrightarrow$ *True then* $\top$ *else* $\bot$ |
- $\Rightarrow *$

7 Some Tests and First Applications

7.1 Exemplification and Encoding

For the following non-theorems we indeed get countermodels by nitpick.

lemma $[(\forall\, R.\forall\, x.\ (\!|R^T,x^T|\!) \rightarrow \{\!|x^T,R^T|\!\})] = \top$
apply *simp* **nitpick** [*user-axioms*, *expect* = *genuine*] **oops** — Countermodel by Nitpick
lemma $[(\forall\, R.\forall\, x.\ \{\!|x^T,R^T|\!\} \rightarrow (\!|R^T,x^T|\!))] = \top$
apply *simp* **nitpick** [*user-axioms*, *expect* = *genuine*] **oops** — Countermodel by Nitpick

With the latter example we also want to illustrate the inflation of representations as caused by our embedding. For this note, that the statement $[(\forall\, R.\forall\, x.\ \{\!|x^T,R^T|\!\} \rightarrow (\!|R^T,x^T|\!))] = \top$ abbreviates the actual internal term (*case case case* $\{\!|da^T,da^T|\!\} \rightarrow (\!|da^T,da^T|\!)$ *of* $P\ x \Rightarrow (\lambda w.\ \forall\, x.$ *case* $\{\!|x^T,da^T|\!\} \rightarrow (\!|da^T,x^T|\!)$ *of* $P\ \psi \Rightarrow \psi\ w)^P \mid F\ x \Rightarrow (\lambda w.\ \forall\, x.$ *case* $\{\!|x^T,da^T|\!\} \rightarrow (\!|da^T,x^T|\!)$ *of* $F\ \psi \Rightarrow \psi\ w)^F \mid \text{-} \Rightarrow da^E$ *of* $P\ x \Rightarrow (\lambda w.\ \forall\, x.$ *case case* $\{\!|da^T,x^T|\!\} \rightarrow (\!|x^T,da^T|\!)$ *of* $P\ xa \Rightarrow (\lambda w.\ \forall\, xa.$ *case* $\{\!|xa^T,x^T|\!\} \rightarrow (\!|x^T,xa^T|\!)$ *of* $P\ \psi \Rightarrow \psi\ w)^P \mid F\ xa \Rightarrow (\lambda w.\ \forall\, xa.$ *case* $\{\!|xa^T,x^T|\!\} \rightarrow (\!|x^T,xa^T|\!)$ *of* $F\ \psi \Rightarrow \psi\ w)^F \mid \text{-} \Rightarrow da^E$ *of* $P\ \psi \Rightarrow \psi\ w)^P \mid F\ x \Rightarrow (\lambda w.\ \forall\, x.$ *case case* $\{\!|da^T,x^T|\!\} \rightarrow (\!|x^T,da^T|\!)$ *of* $P\ xa \Rightarrow (\lambda w.\ \forall\, xa.$ *case* $\{\!|xa^T,x^T|\!\} \rightarrow (\!|x^T,xa^T|\!)$ *of* $P\ \psi \Rightarrow \psi\ w)^P \mid F\ xa \Rightarrow (\lambda w.\ \forall\, xa.$ *case* $\{\!|xa^T,x^T|\!\} \rightarrow (\!|x^T,xa^T|\!)$ *of* $F\ \psi \Rightarrow \psi\ w)^F \mid \text{-} \Rightarrow da^E$ *of* $F\ \psi \Rightarrow \psi\ w)^F \mid \text{-} \Rightarrow da^E$ *of* $P\ \psi \Rightarrow$ *if* $\forall\, w.\ \psi\ w =$ *True then* $\top$ *else* $\bot \mid F\ \psi \Rightarrow$ *if* $\forall\, w.\ \psi\ w =$ *True then* $\top$ *else* $\bot \mid \text{-} \Rightarrow *) = \top$. In Isabelle the inflated term is displayed in the output window when placing the mouse on the abbreviated representation. However, the simplifier is capable of evaluating the annotations and thereby reducing this inflated term again to $\forall\, w\ x\ xa.\ enc\ (x\ xa)\ w \longrightarrow x\ xa\ w$ as intended; one can easily see this when placing the mouse on "simp". Below we will see that the inflated representations can easily fill several pages for abbreviated formulas which are only slightly longer than our exemple formula here. This illustrates the pragmatic infeasibility of the approach when using pen and paper only.

The next two statements are theorems and the simplifier quickly proves this.

lemma $[(\forall\, R.\forall\, x.\ (\!|R^T,x^T|\!) \rightarrow (\!|R^T,x^T|\!))] = \top$ **by** *simp*
lemma $[(\forall\, R.\forall\, x.\ \{\!|x^T,R^T|\!\} \rightarrow \{\!|x^T,R^T|\!\})] = \top$ **by** *simp*

7.2 Verifying K Principle and Necessitation

The next two lemmata show the K principle and neccessitation holds for arbitrary formulas and arbitrary propositional formulas. We present the lemmata in both variants.

lemma $[(\Box(\varphi^F \to \varphi^F)) \to (\Box\varphi^F \to \Box\varphi^F)] = \top$ **apply** *simp* **done** — K Schema

lemma $[\varphi^F] = \top \longrightarrow [\Box\varphi^F] = \top$ **apply** *simp* **done** — Neccessitation

However, as intended, contingent truth does not allow for neccessitation.

lemma $[\mathcal{A}\varphi^F] = \top \longrightarrow [\Box\varphi^F] = \top$ **apply** *simp* **nitpick** [*user-axioms*, *expect* = *genuine*] **oops** — Countermodel
lemma $[\varphi^F]^{sat} = \top \longrightarrow [\Box\varphi^F] = \top$ **apply** *simp* **nitpick** [*user-axioms*, *expect* = *genuine*] **oops** — Countermodel

7.3 Modal Collapse is Countersatisfiable

The modelfinder Nitpick constructs a finite countermodel to the assertion that modal collaps holds.

lemma $[\varphi^F \to \Box\varphi^F] = \top$ **apply** *simp* **nitpick** [*user-axioms*, *expect* = *genuine*] **oops** — Countermodel by Nitpick

7.4 Verifying S5 Principles

The $\Box$-operator could have alternatively been modeled by employing an equivalence relation r in a guarding clause. This has been done in previous work. Our alternative, simpler definition of $\Box$ above omits this clause (since all worlds are reachable from any world in an equivalence relation). The following lemmata, which check various conditions for S5, confirm that we have indeed obtain a correct modeling of S5.

lemma $[\Box\varphi^F \to \varphi^F] = \top$ **apply** *simp* **done**
lemma $[\varphi^F \to \Box\Diamond\varphi^F] = \top$ **apply** *simp* **done**
lemma $[\Box\varphi^F \to \Diamond\varphi^F] = \top$ **apply** *simp* **by** *auto*
lemma $[\Box\varphi^F \to \Box\Box\varphi^F] = \top$ **apply** *simp* **done**
lemma $[\Diamond\varphi^F \to \Box\Diamond\varphi^F] = \top$ **apply** *simp* **done**
lemma $[\Box\Diamond\varphi^F \to \Diamond\varphi^F] = \top$ **apply** *simp* **done** — 5 Schema
lemma $[\Diamond\Box\varphi^F \to \Diamond\varphi^F] = \top$ **apply** *simp* **by** *auto*
lemma $[\Box\Diamond\varphi^F \to \Box\varphi^F] = \top$ **apply** *simp* **nitpick** [*user-axioms*, *expect* = *genuine*] **oops** — Countermodel by Nitpick
lemma $[\Diamond\Box\varphi^F \to \Box\varphi^F] = \top$ **apply** *simp* **done**

7.5 Instances of the Barcan and Converse Formulas

lemma $[(\forall x.\Box\{\!|x^T,\varphi^T|\!\}) \to \Box(\forall x.\{\!|x^T,\varphi^T|\!\})] = \top$ **apply** *simp* **done**
lemma $[(\forall x.\Box(|\varphi^T,x^T|)) \to \Box(\forall x.(|\varphi^T,x^T|))] = \top$ **apply** *simp* **done**

lemma $[(\forall x.\Box(\forall x.\{\!|x^T,\varphi^T|\!\}) \to \Box\{\!|x^T,\varphi^T|\!\})] = \top$ **apply** *simp* **by** *auto*
lemma $[\Box(\forall x.(|\varphi^T,x^T|)) \to (\forall x.\Box(|\varphi^T,x^T|))] = \top$ **apply** *simp* **by** *auto*

7.6 Relations between Meta-Logical Notions

We check some well know relations between meta-logical notions.

lemma $[\varphi^P] = \top \longleftrightarrow [\varphi^P]^{csat} = \bot$ **apply** *simp* **done**
lemma $[\varphi^P]^{sat} = \top \longleftrightarrow [\varphi^P]^{inv} = \bot$ **apply** *simp* **done**
lemma $[\varphi^F] = \top \longleftrightarrow [\varphi^F]^{csat} = \bot$ **apply** *simp* **done**
lemma $[\varphi^F]^{sat} = \top \longleftrightarrow [\varphi^F]^{inv} = \bot$ **apply** *simp* **done**

However, for terms we have:

lemma $[\varphi^T] = *$ **apply** *simp* **done**
lemma $[\varphi^T]^{sat} = *$ **apply** *simp* **done**
lemma $[\varphi^T]^{csat} = *$ **apply** *simp* **done**
lemma $[\varphi^T]^{inv} = *$ **apply** *simp* **done**

7.7 Propagation of Grammatical Information

The expression $(\boldsymbol{\lambda}x.\ \exists\, F.\ \{\!|x^T,F^T|\!\} \wedge \neg(\!|F^T,x^T|\!))$ is an ineligible construct, cf. [10, chap.4]. When placing the mouse on 'simp' we see that this is evaluated to $(\lambda x.\ da)^E$ as intended, i.e. an ERR-term is returned.

lemma $(\boldsymbol{\lambda}x.\ \exists\, F.\ \{\!|x^T,F^T|\!\} \wedge \neg(\!|F^T,x^T|\!)) = X$ **apply** *simp* **oops** — X is $(\lambda x.\ da)^E$

Similarly, the following comprehension principle for abstract objects is an ineligible formula, cf. [10, chap.4]. The simplifier quickly proves that this formula $(\exists\, x.((\!|A!,x^T|\!) \wedge (\forall\, F.\ (\{\!|x^T,F^T|\!\} \equiv (F^T =^1 K)))))$ is equal to $*$. That is, the evaluation of this formula returns the *err* truth value for error.

abbreviation K **where** $K \equiv (\boldsymbol{\lambda}x.\exists\, F.\ \{\!|x^T,F^T|\!\} \wedge \neg(\!|F^T,x^T|\!))$

lemma $[(\exists\, x.((\!|A!,x^T|\!) \wedge (\forall\, F.(\{\!|x^T,F^T|\!\} \equiv (F^T =^1 K)))))] = *$ **apply** *simp* **done**

We also use the latter formula to further illustrate the technical overhead of our embedding. For this see Figure 2, which displays approx. 5% of the unfolded representation of our formula. It should thus be obvious that pen and paper work with the embedding as proposed here is completely infeasible.

8 Some Further Tests

In this section we present some further test examples of our encoding. Many of these tests are taken from papers (e.g. cf. [10] or presentation slides of Zalta.

We show that the derivation from $(\{\!|a^T,PP^T|\!\} \wedge \neg(\!|PP^T,a^T|\!))$ to $(\exists\, F.\{\!|a^T,F^T|\!\} \wedge \neg(\!|F^T,a^T|\!))$ can in fact be represented and solved in our approach, cf. [10, chap.4]

lemma $[(\{\!|a^T,PP^T|\!\} \wedge \neg(\!|PP^T,a^T|\!))] = \top \longrightarrow [(\exists\, F.\{\!|a^T,F^T|\!\} \wedge \neg(\!|F^T,a^T|\!))] = \top$ **apply** *simp* **by** *auto*

8.1 Properties of Equality

8.2 Technological Problem — Pushing Isabelle to its Limits

While $[(\forall\, x\ y\ z.\ (x^T =^3 y^T \wedge y^T =^3 z^T) \rightarrow x^T =^3 z^T)] = \top$ can still be verified by simp, its unfolded internal representation cannot be displayed anymore in Isabelle/HOL's jedit based user interface on a standard Macbook. Isabelle in fact reports the following:

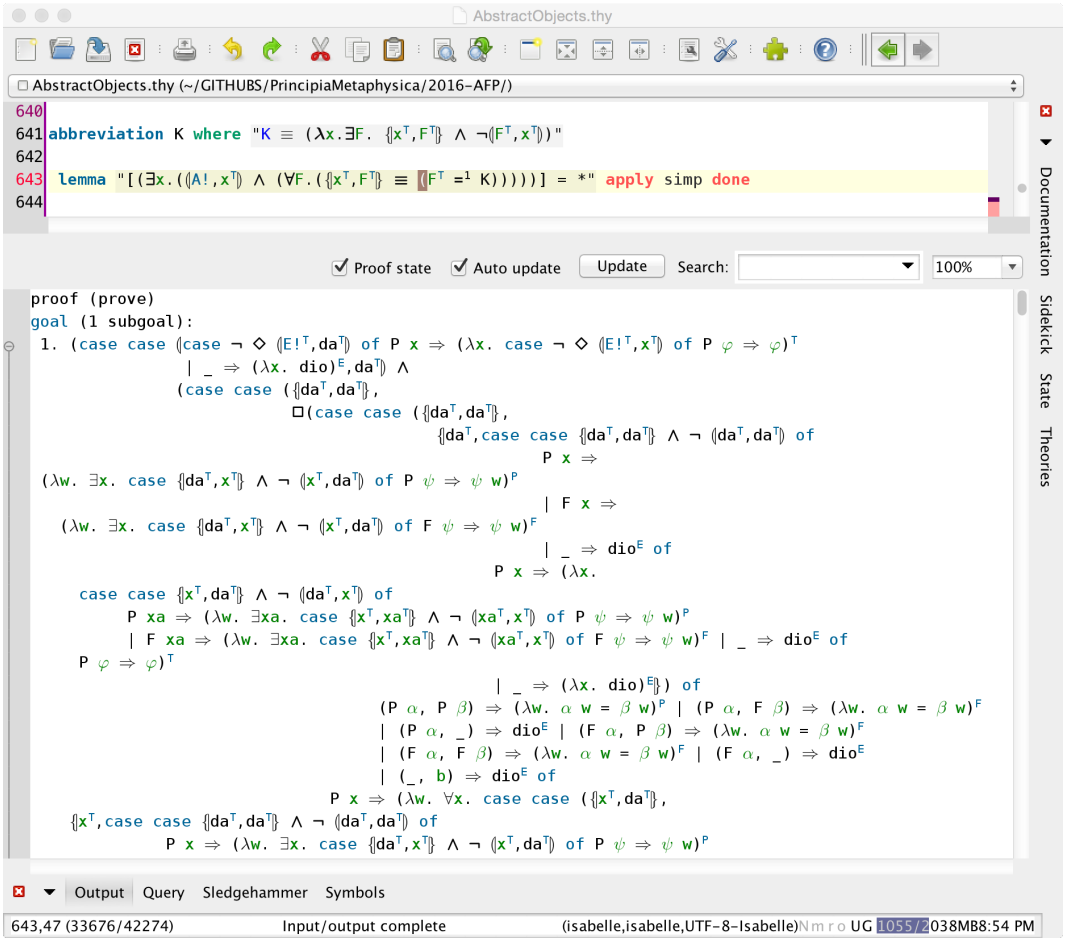

Figure 2: Display (of about 5%) of the unfolded expression $[(\exists\, x.((\!|A!,x^T|\!) \wedge (\forall\, F.\ (\{\!|x^T,F^T|\!\} \equiv (F^T =^1 K)))))] = *$ in Isabelle/HOL.

"No subgoals! exception Size raised (line 182 of "./basis/LibrarySupport.sml")" Displaying the internal unfolded representation still worked for $[(\forall\, x\ y.\ x^T =^3 y^T \rightarrow y^T =^3 x^T)] = \top$ though. The resulting term is presented in the appendix of this paper (on about 240 pages in scriptsize font).

8.3 Axioms and Tests for Actuality

One issue that we did not address yet is how one can possibly encode axiom schemata like $\mathcal{A}\varphi \rightarrow \varphi$ where φ ranges only over $\Box$-free closures. Eventually the grammar should be further refined so that we get a category of $\Box$-free formulas?

lemma $[\mathcal{A}\varphi^P \rightarrow \Box(\mathcal{A}\varphi^P)] = \top$ **apply** *simp* **done**
lemma $[\mathcal{A}\varphi^F \rightarrow \Box(\mathcal{A}\varphi^F)] = \top$ **apply** *simp* **done**

8.4 Some Tests on Lambda-Conversion

Alpha-conversion holds for exemplification.

lemma $[(\boldsymbol{\lambda} y.\ \neg(\!|\, Q^T, y^T \,|\!)) =^1 (\boldsymbol{\lambda} z.\ \neg(\!|\, Q^T, z^T \,|\!))] = \top$ **apply** *simp* **done**
lemma $[\{\!|x^T, (\boldsymbol{\lambda} y.\ \neg(\!|\, Q^T, y^T \,|\!))|\!\} \rightarrow \{\!|x^T, (\boldsymbol{\lambda} z.\ \neg(\!|\, Q^T, z^T \,|\!))|\!\}] = \top$ **apply** *simp* **done**

Eta-conversion holds for exemplification.

lemma $[(\boldsymbol{\lambda} y.\ (\!|\, Q^T, y^T \,|\!)) =^1 Q^T] = \top$ **apply** *simp* **done**

Eta-conversion can be applied to lambda-predicates in encoding formulas.

lemma $[\{\!|x^T, (\boldsymbol{\lambda} y.\ (\!|\, Q^T, y^T \,|\!))|\!\} \rightarrow \{\!|x^T, Q^T|\!\}] = \top$ **apply** *simp* **done**
lemma $[\{\!|x^T, Q^T|\!\} \rightarrow \{\!|x^T, (\boldsymbol{\lambda} y.\ (\!|\, Q^T, y^T \,|\!))|\!\}] = \top$ **apply** *simp* **done**

Some tests related to beta-conversion.

lemma $[(\forall z.\ (\!|(\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (p^P \vee \neg p^P))), z^T \,|\!|) \equiv (\!|(\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (q^P \vee \neg q^P))), z^T \,|\!|)] = \top$ **apply** *simp* **done**

lemma $[(\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (q^P \vee \neg q^P))) =^1 (\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (p^P \vee \neg p^P)))] = \top$ **apply** *simp* **done**
lemma $[(\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (q^P \vee \neg q^P))) =^1 (\boldsymbol{\lambda} z.\ ((\!|\, Q^T, z^T \,|\!) \wedge (p^P \vee \neg p^P)))] = \top$ **apply** *simp* **done**

8.5 Serious Problem: Boolean Extensionality.

The following should not hold in object theory, but it it is provable in our embedding. Boolean extensionality is exploited by the simplifier.

lemma $[\{\!|x^T, (\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (q^P \vee \neg q^P)))|\!\} \rightarrow \{\!|x^T, (\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (p^P \vee \neg p^P)))|\!\}] = \top$ **apply** *simp* **done**

The reason obviously is that the simplifier of Isabelle detects that $(q^P \vee \neg q^P)$ and $(p^P \vee \neg p^P)$ both denote truth. Thus, it simplifies/rewrites both sides of the implication into identical terms. The statement remains provable even if we slightly modify it (alpha-renaming).

lemma $[\{\!|x^T, (\boldsymbol{\lambda} y.\ ((\!|\, Q^T, y^T \,|\!) \wedge (q^P \vee \neg q^P)))|\!\} \rightarrow \{\!|x^T, (\boldsymbol{\lambda} z.\ ((\!|\, Q^T, z^T \,|\!) \wedge (p^P \vee \neg p^P)))|\!\}] = \top$ **apply** *simp* **done**

This is because we also can prove:

lemma $[\{\!|x^T, (\boldsymbol{\lambda} y.\ (\!|\, Q^T, y^T \,|\!))|\!\} \rightarrow \{\!|x^T, (\boldsymbol{\lambda} z.\ (\!|\, Q^T, z^T \,|\!))|\!\}] = \top$ **apply** *simp* **done**

In general, we do not want that the following inference holds. This is in fact the case and Nitpick finds a countermodel.

lemma $[(\{\!|x^T, Q^T|\!\} \wedge (\Box(\forall x.\ ((\!|\, Q^T, x^T \,|\!) \rightarrow (\!|\, G^T, x^T \,|\!))))) \rightarrow \{\!|x^T, G^T|\!\}] = \top$ **apply** *simp*
nitpick [*user-axioms*, *expect* = *genuine*, *format* = *2*] **oops**

The following should again be provable. This is in line with our approach and confirmed by the provers.

lemma $[(\{\!|x^T, Q^T|\!\} \wedge Q^T =^1 G^T) \rightarrow \{\!|x^T, G^T|\!\}] = \top$ **apply** *simp* **by** *auto*

Summary: At this point I have no idea whether the above issue with Boolean extensionality can be saved. How can we block Boolean extensionality from being applied in the above situation in our framework?

8.6 Theory of Encoding

We present a small case study in the theory of encoding. For this we first postulate some axioms and provide some further definitions/abbreviations.

axiomatization where
RigityOfEncoding: $[\{\!|x^T,FF^T|\!\} \rightarrow \Box\{\!|x^T,FF^T|\!\}] = \top$ **and**
OrdinaryObjectsDoNotEncode: $[(\!|O!,x^T|\!) \rightarrow \Box(\neg(\exists\, F.\ \{\!|x^T,F^T|\!\}))] = \top$ **and**
ObjectComprehension: $[(\exists\, x.\ (\!|A!,x^T|\!) \wedge (\forall\, F.\ \{\!|x^T,F^T|\!\} \equiv \varphi))] = \top$

abbreviation *Situation*::*e opt*⇒*io opt* **where**
$Situation\ x \equiv ((\!|A!,x|\!) \wedge (\forall\, F.\ (\{\!|x,F^T|\!\} \rightarrow (\exists\, p.\ F^T =^1 (\boldsymbol{\lambda} y.\ p^P)))))$
abbreviation *PIsTrueInX*::*e opt* ⇒ (*i* ⇒ *bool*) *opt* ⇒ (*i* ⇒ *bool*) *opt* (**infixl** $\models$ *63*) **where**
$x \models p \equiv \{\!|x,(\boldsymbol{\lambda} y.\ p)|\!\}$
abbreviation *PossibleWorld*::*e opt*⇒*io opt* **where**
$PossibleWorld\ x \equiv Situation(x) \wedge \Diamond(\forall\, p.\ (x \models p^P) \equiv p^P)$
abbreviation *Maximal*::*e opt*⇒*io opt* **where**
$Maximal\ s \equiv (\forall\, p.\ (s \models p^P) \vee (s \models (\neg\ p^P)))$

We are now in the position to formalize and prove the fundamental theorem of possible worlds, which states that possible worlds are maximal.

lemma $[(\forall\, x.\ PossibleWorld(x^T) \rightarrow Maximal(x^T))] = \top$ **apply** *simp* **using** *encAxiom2* **by** *metis*

8.7 Consistency?

Unfortunately, neither Nitpick nor the available ATPs are capable of verifying or disproving the consistency of the introduced theory.

lemma *True* **nitpick** [*satisfy*, *user-axioms*] **oops**
lemma *False* **sledgehammer** [*remote-leo2 remote-satallax*] **oops**
lemma *False* **sledgehammer oops**

9 Conclusion

We have experimented with an idea towards a shallow embedding of MRTT in functional type theory and we have pushed the technical elaboration of that idea to some interesting intermediate state. While our embedding is clearly infeasible for pen and paper methods, our original hope has been that – modulo our embedding – interactive and automated theorem provers for functional type theory could, at least to a reasonable extend, be (re-)used for reasoning within MRTT and subsequently for reasoning in the theory of abstract objects.

However, within the system infrastructure of Isabelle/HOL we seem to reach some technological limits (e.g. the internal formula representing the transitivity of equality between ternary relations cannot be displayed anymore because of its size and consistency can neither be proved nor disproved anymore, etc.). On the other hand, we were still able automatically confirm the fundamental theorem of possible worlds, and in this respect the degree of automation provided in our experiments is reaching an interesting level; cf. the experiments in related work where a significant amount of handselected instantiations of schemata was needed (e.g. for comprehension and lambda conversion) [6, 1].

More problematic is the challenge to restrict Boolean extensionality; we briefly discussed the issue by an example in Subsection **??**.

Independent of the outcome of the further research based upon the presented embedding it should become clear that building a system similar to Isabelle but with taking MRTT as its foundational core logic (instead of functional type theory) would surely provide a technologically more appropriate base environment for the formalization and automation of the theory of abstract objects and the principia metaphysica.

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A Display of the Unfolded Term representing the Symmetry of $=^3$

```
proof (prove)
goal (1 subgoal):
 1. (case case case (case case (case case (daT,case daT,daT,daT,daT of
                                            P x  (x. case daT,xT,daT,daT of P   )T
                                            | _  (x. dio)E,
                                        daT,case daT,daT,daT,daT of
                                            P x  (x. case daT,xT,daT,daT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P x  (w. x. case case (xT,case daT,daT,daT,daT of
      P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
  xT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                                | F x  (w. x. case case (xT,case daT,daT,daT,daT of
       P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
    xT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                                | _  dioE)
                            (case case (daT,case daT,daT,daT,daT of
                                            P x  (x. case daT,daT,xT,daT of P   )T
                                            | _  (x. dio)E,
                                        daT,case daT,daT,daT,daT of
                                            P x  (x. case daT,daT,xT,daT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P x  (w. x. case case (xT,case daT,daT,daT,daT of
      P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
  xT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                                | F x  (w. x. case case (xT,case daT,daT,daT,daT of
       P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
    xT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                                | _  dioE)
                            (case case (daT,case daT,daT,daT,daT of
                                            P x  (x. case daT,daT,daT,xT of P   )T
                                            | _  (x. dio)E,
                                        daT,case daT,daT,daT,daT of
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                                                P x  (x. case daT,daT,daT,xT of P   )T
                                                | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P x  (w. x. case case (xT,case daT,daT,daT,daT of
    P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
xT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                    | F x  (w. x. case case (xT,case daT,daT,daT,daT of
      P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
  xT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                                    | _  dioE) of
                            P x  (w. x. case (case case (daT,case daT,daT,daT,xT of
     P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                 xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                            | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                          | _  (x. dio)E,
                   xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                            | _  dioE)
                                        (case case (daT,case daT,daT,daT,xT of
     P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                 xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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          | (_, b)  dioE of
      P    w)P
                                              | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                              | _  dioE)
                                           (case case (daT,case daT,daT,xT,daT of
      P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
 daT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                           P xa  (w.
  xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xa  (w.
   xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                              | _  dioE) of
                                        P    w)P
                                 | F x  (w. x. case (case case (daT,case daT,daT,daT,xT of
      P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
  daT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xa  (w.
   xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                                 | F xa  (w.
     xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                           | _  (x. dio)E,
                     xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
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                                                | _  dioE)
                                               (case case (daT,case daT,daT,daT,xT of
      P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
 daT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
  xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                    xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                                | F xa  (w.
    xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                          | _  (x. dio)E,
                      xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                               | _  dioE)
                                              (case case (daT,case daT,daT,xT,daT of
      P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
 daT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
  xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E,
                    xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                                | F xa  (w.
    xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                          | _  (x. dio)E,
                      xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                               | _  dioE) of
                                        F    w)F
                                  | _  dioE of
                              P x  (w. x. case case (case case (daT,case daT,daT,xT,daT of
     P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
 daT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                P xa  (w.
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xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                             | _  dioE)
                                           (case case (daT,case daT,xT,daT,daT of
     P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xa  (w.
 xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                             | _  dioE)
                                           (case case (daT,case daT,xT,daT,daT of
     P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xa  (w.
 xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
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                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
      F    w)F
                                          | _  dioE) of
                                    P xa  (w. xa. case (case case (daT,case daT,daT,xT,xaT of
                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                 daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                      | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
     P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                       P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,xT,xaT of
                                       P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
     | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         F    w)F
     | _  dioE)
(case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                       P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xT,daT,xaT of
                                       P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
     | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         F    w)F
     | _  dioE)
(case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                    | _  (x. dio)E) of
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            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P    w)P
                                     | F xa  (w. xa.
case (case case (daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E,
                    daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                        | _  (x. dio)E,
                    daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
```

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                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                     xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
      | _  dioE)
   (case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                        | _  (x. dio)E,
                 daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                     xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                     xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
      | _  dioE) of
F    w)F
                                     | _  dioE of
                                P    w)P
                  | F x  (w. x. case case (case case (daT,case daT,daT,xT,daT of
       P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
   daT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xa  (w.
    xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
       P    w)P
                                                 | F xa  (w.
      xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
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                        | _  (x. dio)E,
                    xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                              | _  dioE)
                                            (case case (daT,case daT,xT,daT,daT of
      P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
   daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P xa  (w.
    xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E,
                    xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                              | F xa  (w.
       xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E,
                    xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                              | _  dioE)
                                            (case case (daT,case daT,xT,daT,daT of
      P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
   daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P xa  (w.
    xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E,
                    xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                              | F xa  (w.
       xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E,
                    xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                              | _  dioE) of
                                          P xa  (w. xa.
case (case case (daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E,
                    daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
```

```
                  | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,daT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                       P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                       P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,xT,xaT of
                                       P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                       | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        F    w)F
    | _  dioE)
(case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                  | _  (x. dio)E,
              daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                  | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                      P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xT,daT,xaT of
                                      P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                      | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                       P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                       P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xT,daT,xaT of
                                       P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                       | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        F    w)F
    | _  dioE)
(case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                  | _  (x. dio)E,
              daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                  | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                      P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xT,xaT,daT of
                                      P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
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                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                             P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                             | _  (x. dio)E,
                                          xaaT,case daT,xT,xaT,daT of
                                             P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE) of
P    w)P
                                          | F xa  (w. xa.
  case (case case (daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                           | _  (x. dio)E,
                      daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                           | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                             P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                             | _  (x. dio)E,
                                          xaaT,case daT,daT,xT,xaT of
                                             P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
           | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                               P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                               | _  (x. dio)E,
                                            xaaT,case daT,daT,xT,xaT of
                                               P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                               | _  (x. dio)E) of
                                         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                         | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                         | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
           | _  dioE)
        (case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                           | _  (x. dio)E,
                      daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                           | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                             P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                             | _  (x. dio)E,
                                          xaaT,case daT,xT,daT,xaT of
                                             P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
           | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                               P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                               | _  (x. dio)E,
                                            xaaT,case daT,xT,daT,xaT of
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                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                       | _  (x. dio)E,
                daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
F    w)F
                                       | _  dioE of
                                   F    w)F
                 | _  dioE)
                (case case (case case (daT,case daT,daT,daT,daT of
                                          P x  (x. case daT,xT,daT,daT of P   )T
                                          | _  (x. dio)E,
                                     daT,case daT,daT,daT,daT of
                                          P x  (x. case daT,xT,daT,daT of P   )T
                                          | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P x  (w. x. case case (xT,case daT,daT,daT,daT of
    P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
xT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                               | F x  (w. x. case case (xT,case daT,daT,daT,daT of
      P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
  xT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
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                                | _  dioE)
                               (case case (daT,case daT,daT,daT,daT of
                                                  P x  (x. case daT,daT,xT,daT of P   )T
                                                  | _  (x. dio)E,
                                              daT,case daT,daT,daT,daT of
                                                  P x  (x. case daT,daT,xT,daT of P   )T
                                                  | _  (x. dio)E) of
                                           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                           | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                           | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                      P x  (w. x. case case (xT,case daT,daT,daT,daT of
    P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
xT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   P    w)P
                                      | F x  (w. x. case case (xT,case daT,daT,daT,daT of
      P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
  xT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                     F    w)F
                                | _  dioE)
                               (case case (daT,case daT,daT,daT,daT of
                                                  P x  (x. case daT,daT,daT,xT of P   )T
                                                  | _  (x. dio)E,
                                              daT,case daT,daT,daT,daT of
                                                  P x  (x. case daT,daT,daT,xT of P   )T
                                                  | _  (x. dio)E) of
                                           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                           | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                           | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                      P x  (w. x. case case (xT,case daT,daT,daT,daT of
    P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
xT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   P    w)P
                                      | F x  (w. x. case case (xT,case daT,daT,daT,daT of
      P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
  xT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                     F    w)F
                                | _  dioE) of
                           P x  (w. x. case (case case (daT,case daT,daT,daT,xT of
     P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   P xa  (w.
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xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                    | _  (x. dio)E,
                xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                      | _  (x. dio)E,
                  xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                      | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                            | _  dioE)
                                         (case case (daT,case daT,daT,daT,xT of
     P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xa  (w.
 xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                    | _  (x. dio)E,
                xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                      | _  (x. dio)E,
                  xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                      | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                            | _  dioE)
                                         (case case (daT,case daT,daT,xT,daT of
     P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
daT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xa  (w.
 xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                    | _  (x. dio)E,
                xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                      | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
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                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     F    w)F
                                          | _  dioE) of
                                    P    w)P
                     | F x  (w. x. case (case case (daT,case daT,daT,daT,xT of
     P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                                | _  dioE)
                                           (case case (daT,case daT,daT,daT,xT of
     P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,daT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                                | _  dioE)
                                           (case case (daT,case daT,daT,xT,daT of
     P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
daT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
  xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                       | _  (x. dio)E,
                 xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                       | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P    w)P
                                                | F xa  (w.
    xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                         | _  (x. dio)E,
                   xaT,case daT,daT,xT,daT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                         | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        F    w)F
                                                | _  dioE) of
                                          F    w)F
                     | _  dioE of
                P x  (w. x. case case (case case (daT,case daT,daT,xT,daT of
     P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xa  (w.
 xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P    w)P
                                                | F xa  (w.
  xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        F    w)F
                                                | _  dioE)
                                             (case case (daT,case daT,xT,daT,daT of
     P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xa  (w.
 xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                       | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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          | (_, b)  dioE of
      P    w)P
                                              | F xa  (w.
   xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                              | _  dioE)
                                           (case case (daT,case daT,xT,daT,daT of
      P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                           P xa  (w.
 xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                     | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P    w)P
                                              | F xa  (w.
   xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                              | _  dioE) of
                                        P xa  (w. xa. case (case case (daT,case daT,daT,xT,xaT of
                     P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                  daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
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        | _  dioE)
     (case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                        | _  (x. dio)E,
                   daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
           | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
           | _  dioE)
     (case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                        | _  (x. dio)E,
                   daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
           | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
           | _  dioE) of
P    w)P
                                     | F xa  (w. xa.
case (case case (daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E,
                   daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
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    P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,daT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case daT,daT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
    | _  dioE)
(case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                      P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xT,daT,xaT of
                                      P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                      | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                      P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case daT,xT,daT,xaT of
                                      P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                      | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
    | _  dioE)
(case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                      P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xT,xaT,daT of
                                      P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
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        | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                            P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case daT,xT,xaT,daT of
                                            P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
        | _  dioE) of
F    w)F
                                        | _  dioE of
                                   P    w)P
                  | F x  (w. x. case case (case case (daT,case daT,daT,xT,daT of
       P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
   daT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xa  (w.
    xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E,
                   xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
       P    w)P
                                               | F xa  (w.
      xa. case case (xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                          | _  (x. dio)E,
                     xaT,case daT,daT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                          | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
         F    w)F
                                               | _  dioE)
                                             (case case (daT,case daT,xT,daT,daT of
       P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
   daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xa  (w.
    xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E,
                   xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
       P    w)P
                                               | F xa  (w.
      xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                          | _  (x. dio)E,
                     xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                          | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
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          F    w)F
                                                  | _  dioE)
                                                (case case (daT,case daT,xT,daT,daT of
       P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
    daT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E) of
                                                       (P , P )  (w.  w =  w)P
                                                       | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                       | (F , P )  (w.  w =  w)F
                                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                       | (_, b)  dioE of
                                                  P xa  (w.
     xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E,
                    xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          P    w)P
                                                  | F xa  (w.
       xa. case case (xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                            | _  (x. dio)E,
                      xaT,case daT,xT,daT,daT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                            | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            F    w)F
                                                  | _  dioE) of
                                            P xa  (w. xa.
case (case case (daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                          | _  (x. dio)E,
                     daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
       | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                            P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case daT,daT,xT,xaT of
                                            P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                            | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
       | _  dioE)
     (case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                          | _  (x. dio)E,
                    daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
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                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,xT,daT,xaT of
                                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
        | _  dioE)
    (case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                        | _  (x. dio)E,
                  daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,xT,xaT,daT of
                                          P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
        | _  dioE) of
P    w)P
                                       | F xa  (w. xa.
  case (case case (daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case daT,daT,xT,xaT of P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                        | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xT,xaT of
                                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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                    P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,daT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xT,daT,xaT of P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,daT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xT,xaT,daT of P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,xaT,daT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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                              F    w)F
        | _  dioE) of
F    w)F
                                       | _  dioE of
                                  F    w)F
                | _  dioE) of
            P x  (w. x. case (case case (case case (daT,case daT,daT,daT,daT of
      P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
      P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                        | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                                | _  dioE)
                                             (case case (daT,case daT,daT,daT,daT of
      P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
      P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                        | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                                | _  dioE)
                                             (case case (daT,case daT,daT,daT,daT of
      P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
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                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                      | _  (x. dio)E,
                 xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                      | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
  xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                        | _  (x. dio)E,
                   xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                                | _  dioE) of
                                       P xa  (w. xa. case (case case (daT,case daT,daT,daT,xaT of
                          P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                 daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                        | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                           P x  (x. case daT,xT,daT,xaT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case xT,daT,daT,xaT of
                                           P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                           | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
      | _  dioE)
  (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                      | _  (x. dio)E,
                 daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                      | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                           P x  (x. case daT,daT,xT,xaT of P   )T
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                                          | _  (x. dio)E,
                                      xaaT,case xT,daT,daT,xaT of
                                             P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                             | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE)
    (case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                                      xaaT,case xT,daT,xaT,daT of
                                             P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xT,daT,xaT,daT of
                                             P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE) of
P    w)P
                                       | F xa  (w. xa.
case (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                                      xaaT,case xT,daT,daT,xaT of
                                             P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                             | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xT,daT,daT,xaT of
                                             P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                             | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE)
    (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
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                        | _  (x. dio)E,
                  daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,daT,xT,xaT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                         | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
          | _  dioE)
      (case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                         P x  (x. case daT,daT,xaT,xT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                         P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                         | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
          | _  dioE) of
F    w)F
                                      | _  dioE of
                                  P xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                        P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                  daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
```

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                                    | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                    | _  (x. dio)E,
               daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                    | _  (x. dio)E,
               daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                   daT,case xT,daT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xT,daT,xaT,xaaT of
      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                             | _  dioE)
                          (case case (daT,case daT,xaT,daT,xaaT of
                                      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                   daT,case xT,xaT,daT,xaaT of
                                      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xT,xaT,daT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                             | _  dioE)
                          (case case (daT,case daT,xaT,xaaT,daT of
                                      P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                   daT,case xT,xaT,xaaT,daT of
                                      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
      P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,xaaT,daT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                           | _  dioE) of
                  P    w)P
| F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                          P x  (x. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xT,daT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
          P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                              | _  dioE)
                        (case case (daT,case daT,xaT,daT,xaaT of
                                          P x  (x. case daT,xaT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xT,xaT,daT,xaaT of
                                          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
```

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                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
                P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE)
                            (case case (daT,case daT,xaT,xaaT,daT of
                                                P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                | _  (x. dio)E,
                                      daT,case xT,xaT,xaaT,daT of
                                                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                | xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
               P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE)
                            (case case (daT,case daT,xaT,xaaT,daT of
                                                P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                | _  (x. dio)E,
                                      daT,case xT,xaT,xaaT,daT of
                                                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                | xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
               P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE) of
                        F    w)F
| _  dioE of
                                                    P    w)P
                                  | F xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                        P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                   daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
                P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                                P x  (x. case daT,xT,xaT,daT of P   )T
                                                | _  (x. dio)E,
                                      xaaT,case xT,daT,xaT,daT of
                                                P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
```

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                    P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                    | _  (x. dio)E,
               daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                    | _  (x. dio)E,
               daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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                              F    w)F
         | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                       P x  (x. case daT,xT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,daT,xaT,xaaT of
                                       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
          P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                        (case case (daT,case daT,xaT,daT,xaaT of
                                       P x  (x. case daT,xaT,xT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,xaT,daT,xaaT of
                                       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
          P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                        (case case (daT,case daT,xaT,xaaT,daT of
                                       P x  (x. case daT,xaT,xaaT,xT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,xaT,xaaT,daT of
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                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
       | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                                | _  dioE) of
                     P    w)P
| F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                              P x  (x. case daT,xT,xaT,xaaT of P   )T
                                              | _  (x. dio)E,
                                        daT,case xT,daT,xaT,xaaT of
                                              P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                              | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
          P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                                | _  dioE)
                           (case case (daT,case daT,xaT,daT,xaaT of
                                              P x  (x. case daT,xaT,xT,xaaT of P   )T
                                              | _  (x. dio)E,
                                        daT,case xT,xaT,daT,xaaT of
                                              P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                              | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
          P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                       (case case (daT,case daT,xaT,xaaT,daT of
                                                P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                | _  (x. dio)E,
                                      daT,case xT,xaT,xaaT,daT of
                                                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
   xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE) of
                     F    w)F
| _  dioE of
                                                  F    w)F
                                  | _  dioE)
                                 (case case (case case (daT,case xT,daT,daT,daT of
      P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                       | _  (x. dio)E,
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              xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                      | _  (x. dio)E,
                 xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                      | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
       F    w)F
                                              | _  dioE)
                                            (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                              P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                      | _  (x. dio)E,
                  xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                      | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
       F    w)F
                                              | _  dioE)
                                            (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                              P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                              | F xa  (w.
  xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                      | _  (x. dio)E,
                  xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                      | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     F    w)F
                                          | _  dioE) of
                                    P xa  (w. xa. case (case case (daT,case xT,daT,daT,xaT of
                    P xb  (xaa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
               daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                       | _  (x. dio)E,
                                 xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,xT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                         | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,xT,daT,xaT of P   )T
                                         | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                 xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,daT,xT,xaT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                         | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,daT,xT,xaT of P   )T
                                         | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,daT,xaT,xT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE) of
P    w)P
                                       | F xa  (w. xa.
case (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                        | _  (x. dio)E,
                   daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                            P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case daT,daT,daT,xaT of
                                            P x  (x. case daT,xT,daT,xaT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                        | _  (x. dio)E,
                   daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                            P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case daT,daT,daT,xaT of
                                            P x  (x. case daT,daT,xT,xaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                          | _  (x. dio)E,
                daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,daT,xaT,xT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,daT,xaT,xT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE) of
F    w)F
                                        | _  dioE of
                                    P xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,xT,xaT,daT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,xT,xaT,daT of P   )T
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                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE)
    (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                        | _  (x. dio)E,
                  daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
           | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE)
    (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                        | _  (x. dio)E,
                  daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
           | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                    P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                                daT,case daT,daT,xaT,xaaT of
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                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,daT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                     daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,xaT,daT,xaaT of
      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xT,xaT,xaaT,daT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E,
                                     daT,case daT,xaT,xaaT,daT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,xaT,xaaT,daT of
      P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                            | _  dioE) of
                    P    w)P
| F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                            P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                      daT,case daT,daT,xaT,xaaT of
                                            P x  (x. case daT,xT,xaT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                              | _  dioE)
                        (case case (daT,case xT,xaT,daT,xaaT of
                                              P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                              | _  (x. dio)E,
                                        daT,case daT,xaT,daT,xaaT of
                                              P x  (x. case daT,xaT,xT,xaaT of P   )T
                                              | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                              | _  dioE)
                         (case case (daT,case xT,xaT,xaaT,daT of
                                              P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                              | _  (x. dio)E,
                                         daT,case daT,xaT,xaaT,daT of
                                              P x  (x. case daT,xaT,xaaT,xT of P   )T
                                              | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
           P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
    xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                  | _  dioE) of
                        F    w)F
| _  dioE of
                                                    P    w)P
                                      | F xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                             P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                         daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                               | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
               P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                             P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                             | _  (x. dio)E,
                                        xaaT,case daT,daT,xaT,daT of
                                             P x  (x. case daT,xT,xaT,daT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P    w)P
               | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                             P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                             | _  (x. dio)E,
                                        xaaT,case daT,daT,xaT,daT of
                                             P x  (x. case daT,xT,xaT,daT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
               | _  dioE)
          (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                               | _  (x. dio)E,
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                daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE)
    (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                        | _  (x. dio)E,
                daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case daT,daT,xaT,xaaT of
                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
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                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
                P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                                | _  dioE)
                            (case case (daT,case xT,xaT,daT,xaaT of
                                                P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                                | _  (x. dio)E,
                                      daT,case daT,xaT,daT,xaaT of
                                                P x  (x. case daT,xaT,xT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
               P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
                P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                                F    w)F
                                | _  dioE)
                            (case case (daT,case xT,xaT,xaaT,daT of
                                                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                | _  (x. dio)E,
                                      daT,case daT,xaT,xaaT,daT of
                                                P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
               P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
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                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                                 | _  dioE) of
                            P    w)P
| F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                           P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case daT,daT,xaT,xaaT of
                                           P x  (x. case daT,xT,xaT,xaaT of P   )T
                                           | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                  | _  dioE)
                             (case case (daT,case xT,xaT,daT,xaaT of
                                           P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case daT,xaT,daT,xaaT of
                                           P x  (x. case daT,xaT,xT,xaaT of P   )T
                                           | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                  | _  dioE)
                             (case case (daT,case xT,xaT,xaaT,daT of
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                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case daT,xaT,xaaT,daT of
                                          P x  (x. case daT,xaT,xaaT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
         | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE) of
                    F    w)F
| _  dioE of
                                                F    w)F
                                  | _  dioE) of
                               P    w)P
            | F x  (w. x. case (case case (case case (daT,case daT,daT,daT,daT of
       P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
 daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                               P xa  (w.
  xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                               | F xa  (w.
    xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                         | _  (x. dio)E,
                    xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                               | _  dioE)
                                             (case case (daT,case daT,daT,daT,daT of
       P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
 daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
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                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
    xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                          | _  (x. dio)E,
                   xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          P    w)P
                                                | F xa  (w.
      xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                            | _  (x. dio)E,
                     xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                            | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
            F    w)F
                                                | _  dioE)
                                              (case case (daT,case daT,daT,daT,daT of
         P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
    daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
    xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                          | _  (x. dio)E,
                   xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          P    w)P
                                                | F xa  (w.
      xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                            | _  (x. dio)E,
                     xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                            | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
            F    w)F
                                                | _  dioE) of
                                          P xa  (w. xa.
case (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E,
                 daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
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                                          P x  (x. case daT,xT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
    | _  dioE)
(case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                     | _  (x. dio)E,
               daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
    | _  dioE)
(case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                     | _  (x. dio)E,
               daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
    | _  dioE) of
P    w)P
                                       | F xa  (w. xa.
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case (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,xT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE)
    (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE)
    (case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E,
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                                    xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                           | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,daT,xaT,xT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
F    w)F
                                       | _  dioE of
                                  P xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                           P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                           | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,xT,xaT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,xT,xaT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                           | _  (x. dio)E,
                     daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                           | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                           P x  (x. case daT,xaT,xT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case xT,xaT,daT,daT of
                                           P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
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                                          P x  (x. case daT,xaT,xT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                      P x  (x. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                  daT,case xT,daT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
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                                                F    w)F
                                | _  dioE)
                            (case case (daT,case daT,xaT,daT,xaaT of
                                                P x  (x. case daT,xaT,xT,xaaT of P   )T
                                                | _  (x. dio)E,
                                            daT,case xT,xaT,daT,xaaT of
                                                P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                                (P , P )  (w.  w =  w)P
                                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                                | (F , P )  (w.  w =  w)F
                                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                                | (_, b)  dioE of
                                                            P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
          P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                                  (P , P )  (w.  w =  w)P
                                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                                  | (F , P )  (w.  w =  w)F
                                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                                  | (_, b)  dioE of
                                                              F    w)F
                                | _  dioE)
                            (case case (daT,case daT,xaT,xaaT,daT of
                                                P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                | _  (x. dio)E,
                                            daT,case xT,xaT,xaaT,daT of
                                                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                                (P , P )  (w.  w =  w)P
                                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                                | (F , P )  (w.  w =  w)F
                                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                                | (_, b)  dioE of
                                                            P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                                  (P , P )  (w.  w =  w)P
                                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                                  | (F , P )  (w.  w =  w)F
                                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                                  | (_, b)  dioE of
                                                              F    w)F
                                | _  dioE) of
                    P    w)P
 | F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                                P x  (x. case daT,xT,xaT,xaaT of P   )T
                                                | _  (x. dio)E,
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                                    daT,case xT,daT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
         P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                           | _  dioE)
                      (case case (daT,case daT,xaT,daT,xaaT of
                                          P x  (x. case daT,xaT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaT,daT,xaaT of
                                          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
         P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                           | _  dioE)
                      (case case (daT,case daT,xaT,xaaT,daT of
                                          P x  (x. case daT,xaT,xaaT,xT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaT,xaaT,daT of
                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
         P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
   xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
         | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE) of
                     F    w)F
| _  dioE of
                                                    P    w)P
                                    | F xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                                P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                         daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                                 P x  (x. case daT,xT,xaT,daT of P   )T
                                                 | _  (x. dio)E,
                                       xaaT,case xT,daT,xaT,daT of
                                                 P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                                 | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                                   P x  (x. case daT,xT,xaT,daT of P   )T
                                                   | _  (x. dio)E,
                                         xaaT,case xT,daT,xaT,daT of
                                                   P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                                   | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
          | _  dioE)
       (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                                | _  (x. dio)E,
                      daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                                 P x  (x. case daT,xaT,xT,daT of P   )T
                                                 | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                                 P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                                 | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                             P x  (x. case daT,xaT,xT,daT of P   )T
                                             | _  (x. dio)E,
                                          xaaT,case xT,xaT,daT,daT of
                                             P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
        | _  dioE)
    (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                             P x  (x. case daT,xaT,daT,xT of P   )T
                                             | _  (x. dio)E,
                                          xaaT,case xT,xaT,daT,daT of
                                             P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                             P x  (x. case daT,xaT,daT,xT of P   )T
                                             | _  (x. dio)E,
                                          xaaT,case xT,xaT,daT,daT of
                                             P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
        | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                          P x  (x. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xT,daT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                       (P , P )  (w.  w =  w)P
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                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                        | _  dioE)
                    (case case (daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                        | _  dioE)
                    (case case (daT,case daT,xaT,xaaT,daT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                    daT,case xT,xaT,xaaT,daT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
       | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                        | _  dioE) of
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                    P    w)P
  | F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                         P x  (x. case daT,xT,xaT,xaaT of P   )T
                                         | _  (x. dio)E,
                                       daT,case xT,daT,xaT,xaaT of
                                         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                         | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
          P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                    P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
            P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                                 | _  dioE)
                               (case case (daT,case daT,xaT,daT,xaaT of
                                         P x  (x. case daT,xaT,xT,xaaT of P   )T
                                         | _  (x. dio)E,
                                       daT,case xT,xaT,daT,xaaT of
                                         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                         | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
          P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                    P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
            P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                                 | _  dioE)
                               (case case (daT,case daT,xaT,xaaT,daT of
                                         P x  (x. case daT,xaT,xaaT,xT of P   )T
                                         | _  (x. dio)E,
                                       daT,case xT,xaT,xaaT,daT of
                                         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                         | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
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    xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
            | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
              P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
        xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                     F    w)F
                                  | _  dioE) of
                        F    w)F
   | _  dioE of
                                                        F    w)F
                                     | _  dioE)
                                    (case case (case case (daT,case xT,daT,daT,daT of
         P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
   daT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   P xa  (w.
    xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                          | _  (x. dio)E,
                   xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                   | F xa  (w.
       xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                             | _  (x. dio)E,
                      xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                             | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                                   | _  dioE)
                                                  (case case (daT,case xT,daT,daT,daT of
         P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
   daT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   P xa  (w.
    xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                          | _  (x. dio)E,
                   xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                   | F xa  (w.
       xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
```

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                          | _  (x. dio)E,
                      xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                          | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                                | _  dioE)
                                              (case case (daT,case xT,daT,daT,daT of
        P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
    daT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                    P xa  (w.
     xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                          | _  (x. dio)E,
                      xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                          | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           P    w)P
                                                | F xa  (w.
       xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                          | _  (x. dio)E,
                      xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                          | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                                | _  dioE) of
                                            P xa  (w. xa.
case (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                          | _  (x. dio)E,
                     daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                      P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                      P x  (x. case daT,xT,daT,xaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
         | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                       | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,xT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
         | _  dioE)
      (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                          | _  (x. dio)E,
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                    daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
         | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
         | _  dioE)
      (case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                          | _  (x. dio)E,
                    daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
         | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
         | _  dioE) of
P    w)P
                                       | F xa  (w. xa.
  case (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                          | _  (x. dio)E,
                    daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E,
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                                xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,xT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                         | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,xT,daT,xaT of P   )T
                                         | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                     | _  (x. dio)E,
               daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,daT,xT,xaT of P   )T
                                       | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                         | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,daT,xT,xaT of P   )T
                                         | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                     | _  (x. dio)E,
               daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,xaT,daT of
                                       P x  (x. case daT,daT,xaT,xT of P   )T
                                       | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
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                                        xaaT,case daT,daT,xaT,daT of
                                               P x  (x. case daT,daT,xaT,xT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
          | _  dioE) of
F    w)F
                                          | _  dioE of
                                       P xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                            P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                     daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                            | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                               P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                               | _  (x. dio)E,
                                          xaaT,case daT,daT,xaT,daT of
                                               P x  (x. case daT,xT,xaT,daT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                                 P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                                 | _  (x. dio)E,
                                            xaaT,case daT,daT,xaT,daT of
                                                 P x  (x. case daT,xT,xaT,daT of P   )T
                                                 | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
          | _  dioE)
     (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                            | _  (x. dio)E,
                     daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                            | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                               P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                               | _  (x. dio)E,
                                          xaaT,case daT,xaT,daT,daT of
                                               P x  (x. case daT,xaT,xT,daT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                                 P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                                 | _  (x. dio)E,
                                            xaaT,case daT,xaT,daT,daT of
                                                 P x  (x. case daT,xaT,xT,daT of P   )T
                                                 | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
          | _  dioE)
```

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      (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                         | _  (x. dio)E,
                   daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                         | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                       P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xaT,daT,daT of
                                       P x  (x. case daT,xaT,daT,xT of P   )T
                                       | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
          | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case daT,daT,xaT,xaaT of
                                      P x  (x. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                           | _  dioE)
                      (case case (daT,case xT,xaT,daT,xaaT of
                                      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case daT,xaT,daT,xaaT of
                                      P x  (x. case daT,xaT,xT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
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       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                 F    w)F
                              | _  dioE)
                           (case case (daT,case xT,xaT,xaaT,daT of
                                                 P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
                                       daT,case daT,xaT,xaaT,daT of
                                                 P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                 | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                 F    w)F
                              | _  dioE) of
                     P    w)P
 | F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                                   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                                   | _  (x. dio)E,
                                         daT,case daT,daT,xaT,xaaT of
                                                   P x  (x. case daT,xT,xaT,xaaT of P   )T
                                                   | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                 P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
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        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                            | _  dioE)
                        (case case (daT,case xT,xaT,daT,xaaT of
                                            P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                      daT,case daT,xaT,daT,xaaT of
                                            P x  (x. case daT,xaT,xT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                            | _  dioE)
                        (case case (daT,case xT,xaT,xaaT,daT of
                                            P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                            | _  (x. dio)E,
                                      daT,case daT,xaT,xaaT,daT of
                                            P x  (x. case daT,xaT,xaaT,xT of P   )T
                                            | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
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                                                F    w)F
                                | _  dioE) of
                        F    w)F
| _  dioE of
                                                    P    w)P
                                    | F xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                                P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                         daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                                | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
              P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                            | _  (x. dio)E,
                                        xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,xT,xaT,daT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
              | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                              P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                              | _  (x. dio)E,
                                          xaaT,case daT,daT,xaT,daT of
                                              P x  (x. case daT,xT,xaT,daT of P   )T
                                              | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
              | _  dioE)
        (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                | _  (x. dio)E,
                         daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                                | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
              P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                            | _  (x. dio)E,
                                        xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,xT,daT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
              | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                              P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                              | _  (x. dio)E,
                                          xaaT,case daT,xaT,daT,daT of
                                              P x  (x. case daT,xaT,xT,daT of P   )T
                                              | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  F    w)F
              | _  dioE)
        (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                | _  (x. dio)E,
                         daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                                | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
          | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,daT,xaT,xaaT of
                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                        (case case (daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                 | _  dioE)
                             (case case (daT,case xT,xaT,xaaT,daT of
                                                 P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case daT,xaT,xaaT,daT of
                                                 P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                 | _  dioE) of
                       P    w)P
 | F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                               P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                               | _  (x. dio)E,
                                         daT,case daT,daT,xaT,xaaT of
                                               P x  (x. case daT,xT,xaT,xaaT of P   )T
                                               | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
           P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
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      xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                                | _  dioE)
                            (case case (daT,case xT,xaT,daT,xaaT of
                                                      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                                      | _  (x. dio)E,
                                                 daT,case daT,xaT,daT,xaaT of
                                                      P x  (x. case daT,xaT,xT,xaaT of P   )T
                                                      | _  (x. dio)E) of
                                           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                           | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                           | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                      P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
            P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
       xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
              | _  (x. dio)E) of
                                                            (P , P )  (w.  w =  w)P
                                                            | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                            | (F , P )  (w.  w =  w)F
                                                            | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                            | (_, b)  dioE of
                                                         P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
              P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
        xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                                | _  dioE)
                            (case case (daT,case xT,xaT,xaaT,daT of
                                                      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                      | _  (x. dio)E,
                                                 daT,case daT,xaT,xaaT,daT of
                                                      P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                      | _  (x. dio)E) of
                                           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                           | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                           | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                      P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
            P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
       xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
              | _  (x. dio)E) of
                                                            (P , P )  (w.  w =  w)P
                                                            | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                            | (F , P )  (w.  w =  w)F
                                                            | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                            | (_, b)  dioE of
                                                         P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
              P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                                | _  dioE) of
                        F    w)F
   | _  dioE of
                                                         F    w)F
                                | _  dioE) of
                             F    w)F
              | _  dioE of
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       P x  (w. x. case case (case case (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                               | _  dioE)
                                             (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                               | _  dioE)
                                             (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                     | _  (x. dio)E,
                xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
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                  | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
       | (_, b)  dioE of
   P    w)P
                                              | F xa  (w.
xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                    | _  (x. dio)E,
               xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
     F    w)F
                                           | _  dioE) of
                                    P xa  (w. xa. case (case case (daT,case xT,daT,daT,xaT of
                     P xb  (xaa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
               daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                       | _  (x. dio)E,
                                 xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,xT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                       P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                         | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,xT,daT,xaT of P   )T
                                         | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         F    w)F
    | _  dioE)
(case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                 xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,daT,xT,xaT of P   )T
                                       | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                       P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                         | _  (x. dio)E,
                                   xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,daT,xT,xaT of P   )T
                                         | _  (x. dio)E) of
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                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE)
     (case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                          | _  (x. dio)E,
                 daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                            P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case daT,daT,xaT,daT of
                                            P x  (x. case daT,daT,xaT,xT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 F    w)F
        | _  dioE) of
P    w)P
                                     | F xa  (w. xa.
case (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                          | _  (x. dio)E,
                 daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                            P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case daT,daT,daT,xaT of
                                            P x  (x. case daT,xT,daT,xaT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 F    w)F
        | _  dioE)
     (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                          | _  (x. dio)E,
                 daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
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                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                           P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case daT,daT,daT,xaT of
                                           P x  (x. case daT,daT,xT,xaT of P   )T
                                           | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
          | _  dioE)
      (case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                           | _  (x. dio)E,
                  daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,daT,xaT,xT of P   )T
                                           | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,daT,xaT,xT of P   )T
                                           | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
          | _  dioE) of
F    w)F
                                        | _  dioE of
                                    P xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                  daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case daT,daT,xaT,daT of
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                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                     | _  (x. dio)E,
               daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                     | _  (x. dio)E,
               daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
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                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case daT,daT,xaT,xaaT of
                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,daT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                        (case case (daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,xaT,daT,xaaT of
      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                        (case case (daT,case xT,xaT,xaaT,daT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E,
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                                    daT,case daT,xaT,xaaT,daT of
                                          P x  (x. case daT,xaT,xaaT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                          xaaaT,case daT,xaT,xaaT,daT of
      P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                           P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                             F    w)F
                             | _  dioE) of
                    P    w)P
| F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case daT,daT,xaT,xaaT of
                                          P x  (x. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                             P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                               F    w)F
                               | _  dioE)
                           (case case (daT,case xT,xaT,daT,xaaT of
                                          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case daT,xaT,daT,xaaT of
                                          P x  (x. case daT,xaT,xT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
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                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
                P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE)
                            (case case (daT,case xT,xaT,xaaT,daT of
                                                  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                  | _  (x. dio)E,
                                        daT,case daT,xaT,xaaT,daT of
                                                  P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                  | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
               P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE) of
                        F    w)F
| _  dioE of
                                                  P    w)P
                                    | F xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                              P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                         daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                               | _  (x. dio)E) of
                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                    | (_, b)  dioE of
                P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,xT,xaT,daT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
                | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
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                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,xT,xaT,daT of P   )T
                                           | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
        | _  dioE)
    (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                       | _  (x. dio)E,
                  daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                           P x  (x. case daT,xaT,xT,daT of P   )T
                                           | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                           P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                           | _  (x. dio)E,
                                       xaaT,case daT,xaT,daT,daT of
                                           P x  (x. case daT,xaT,xT,daT of P   )T
                                           | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE)
    (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                       | _  (x. dio)E,
                  daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                           P x  (x. case daT,xaT,daT,xT of P   )T
                                           | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                           P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                           | _  (x. dio)E,
                                       xaaT,case daT,xaT,daT,daT of
                                           P x  (x. case daT,xaT,daT,xT of P   )T
                                           | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
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                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,daT,xaT,xaaT of
                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                             | _  dioE)
                        (case case (daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                             | _  dioE)
                        (case case (daT,case xT,xaT,xaaT,daT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,xaaT,daT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
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xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    F    w)F
                                 | _  dioE) of
                       P    w)P
 | F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                                  P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                                  | _  (x. dio)E,
                                             daT,case daT,daT,xaT,xaaT of
                                                  P x  (x. case daT,xT,xaT,xaaT of P   )T
                                                  | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
           P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
           | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                      F    w)F
                                    | _  dioE)
                                (case case (daT,case xT,xaT,daT,xaaT of
                                                  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                                  | _  (x. dio)E,
                                             daT,case daT,xaT,daT,xaaT of
                                                  P x  (x. case daT,xaT,xT,xaaT of P   )T
                                                  | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
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          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                | _  dioE)
                             (case case (daT,case xT,xaT,xaaT,daT of
                                                    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                    | _  (x. dio)E,
                                           daT,case daT,xaT,xaaT,daT of
                                                    P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                    | _  (x. dio)E) of
                                         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                         | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                         | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
   xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                | _  dioE) of
                     F    w)F
| _  dioE of
                                                      F    w)F
                                | _  dioE)
                               (case case (case case (daT,case daT,daT,daT,daT of
      P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
      P    w)P
                                                | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                        | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
       F    w)F
                                          | _  dioE)
                                       (case case (daT,case daT,daT,daT,daT of
     P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                          | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                          | _  dioE)
                                       (case case (daT,case daT,daT,daT,daT of
     P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                          | F xa  (w.
   xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                          | _  dioE) of
                                    P xa  (w. xa. case (case case (daT,case daT,daT,daT,xaT of
                    P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                       | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
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                                        P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,xT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
    | _  dioE)
(case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                     | _  (x. dio)E,
               daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
    | _  dioE)
(case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                     | _  (x. dio)E,
               daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                                   xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E,
                                  xaaT,case xT,daT,xaT,daT of
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                                                P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    F    w)F
        | _  dioE) of
P    w)P
                                             | F xa  (w. xa.
case (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                           | _  (x. dio)E,
                    daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                                P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                                         xaaT,case xT,daT,daT,xaT of
                                                P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                                P x  (x. case daT,xT,daT,xaT of P   )T
                                                | _  (x. dio)E,
                                          xaaT,case xT,daT,daT,xaT of
                                                P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE)
    (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                           | _  (x. dio)E,
                    daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                                P x  (x. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                                         xaaT,case xT,daT,daT,xaT of
                                                P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                                P x  (x. case daT,daT,xT,xaT of P   )T
                                                | _  (x. dio)E,
                                          xaaT,case xT,daT,daT,xaT of
                                                P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                                | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE)
    (case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                           | _  (x. dio)E,
                    daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
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                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                       P x  (x. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E,
                                     xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
          | _  dioE) of
F    w)F
                                     | _  dioE of
                                  P xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                            P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                       daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                            | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                       P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                     xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
          | _  dioE)
       (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E,
                   daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                       P x  (x. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                       P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,xT,daT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,daT,xT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                           P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                      daT,case xT,daT,xaT,xaaT of
                                            P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                          xaaaT,case xT,daT,xaT,xaaT of
      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
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                                                | (_, b)  dioE of
                                            F    w)F
                        | _  dioE)
                    (case case (daT,case daT,xaT,daT,xaaT of
                                    P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                daT,case xT,xaT,daT,xaaT of
                                    P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                    | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,daT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                        | _  dioE)
                    (case case (daT,case daT,xaT,xaaT,daT of
                                    P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                daT,case xT,xaT,xaaT,daT of
                                    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                    | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
      P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,xaaT,daT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                        | _  dioE) of
                P    w)P
| F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                    P x  (x. case daT,xT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,daT,xaT,xaaT of
                                    P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                    | _  (x. dio)E) of
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                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case daT,xaT,daT,xaaT of
                                                 P x  (x. case daT,xaT,xT,xaaT of P   )T
                                                 | _  (x. dio)E,
                                      daT,case xT,xaT,daT,xaaT of
                                                 P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                                 | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case daT,xaT,xaaT,daT of
                                                 P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                 | _  (x. dio)E,
                                      daT,case xT,xaT,xaaT,daT of
                                                 P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
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        | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
   xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                              | _  dioE) of
                     F    w)F
| _  dioE of
                                                      P    w)P
                                   | F xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                            P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                            | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                               P x  (x. case daT,xT,xaT,daT of P   )T
                                               | _  (x. dio)E,
                                        xaaT,case xT,daT,xaT,daT of
                                               P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                                 P x  (x. case daT,xT,xaT,daT of P   )T
                                                 | _  (x. dio)E,
                                          xaaT,case xT,daT,xaT,daT of
                                                 P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                                 | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 F    w)F
          | _  dioE)
       (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                               | _  (x. dio)E,
                     daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                               | _  (x. dio)E) of
                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                  | (_, b)  dioE of
             P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                                 P x  (x. case daT,xaT,xT,daT of P   )T
                                                 | _  (x. dio)E,
                                          xaaT,case xT,xaT,daT,daT of
                                                 P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                                 | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P    w)P
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        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,xT,daT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE)
      (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                          | _  (x. dio)E,
                  daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,daT,xT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                            P x  (x. case daT,xaT,daT,xT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case xT,xaT,daT,daT of
                                            P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                            P x  (x. case daT,xT,xaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                       daT,case xT,daT,xaT,xaaT of
                                            P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
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                                                | (_, b)  dioE of
                                           F    w)F
                          | _  dioE)
                     (case case (daT,case daT,xaT,daT,xaaT of
                                      P x  (x. case daT,xaT,xT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case xT,xaT,daT,xaaT of
                                      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                          | _  dioE)
                     (case case (daT,case daT,xaT,xaaT,daT of
                                      P x  (x. case daT,xaT,xaaT,xT of P   )T
                                      | _  (x. dio)E,
                                 daT,case xT,xaT,xaaT,daT of
                                      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                          | _  dioE) of
                    P    w)P
 | F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                     P x  (x. case daT,xT,xaT,xaaT of P   )T
```

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                                        | _  (x. dio)E,
                                    daT,case xT,daT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
         P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                            | _  dioE)
                        (case case (daT,case daT,xaT,daT,xaaT of
                                          P x  (x. case daT,xaT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaT,daT,xaaT of
                                          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
         P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                            | _  dioE)
                        (case case (daT,case daT,xaT,xaaT,daT of
                                          P x  (x. case daT,xaT,xaaT,xT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaT,xaaT,daT of
                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
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                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
   xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                             | _  dioE) of
                     F    w)F
| _  dioE of
                                                    F    w)F
                                | _  dioE) of
                             P xa  (w. xa. case (case case (case case (daT,case xT,daT,daT,daT of
                       P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,xT,daT,daT of P   )T
                       | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,xaT,daT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,xT,daT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
      | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                           P xa  (xa. case xT,xaT,daT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case xaT,daT,daT,daT of
                                           P x  (x. case xaT,xT,daT,daT of P   )T
                                           | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
      | _  dioE)
   (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                        | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                        | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,xT,daT of P   )T
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                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                       P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
                                    daT,case xaT,daT,daT,xaaT of
                                       P x  (x. case xaT,xT,daT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
      P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xaT,daT,daT,xaaT of
      P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                             P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
        P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
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                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            F    w)F
                          | _  dioE)
                      (case case (daT,case xT,daT,daT,xaaT of
                                          P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,daT,xT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
      P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xaT,daT,daT,xaaT of
      P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                               P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
        P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                 F    w)F
                          | _  dioE)
                      (case case (daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,daT,xaaT,xT of P   )T
                                          | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                               P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
        P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                 F    w)F
                          | _  dioE) of
                  P    w)P
| F xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                       P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
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                                    daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,xT,daT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                        (case case (daT,case xT,daT,daT,xaaT of
                                          P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,daT,xT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                        (case case (daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,daT,xaaT,xT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
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                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
          P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
   xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                  | _  dioE) of
                        F    w)F
| _  dioE of
                                                    P xb  (w.
       xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E,
                                     daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,xT,xaaT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                  | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
     P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,daT,xaaT,daT of
     P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                        (case case (daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                     daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                  | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
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xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                           | _  dioE)
                      (case case (daT,case xT,xaaT,daT,daT of
                                                P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                                | _  (x. dio)E,
                                             daT,case xaT,xaaT,daT,daT of
                                                P x  (x. case xaT,xaaT,daT,xT of P   )T
                                                | _  (x. dio)E) of
                                          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                          | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                                  xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
        P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                                | _  dioE) of
                        P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                                  daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w. xaaaa.
   case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                 | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                   | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                   | (_, b)  dioE of
          F    w)F
                                             | _  dioE)
                                          (case case (daT,case xT,xaaT,daT,xaaaT of
    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                                  daT,case xaT,xaaT,daT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
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                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w. xaaaa.
  case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                     | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                     | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                                | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        F    w)F
                                                | _  dioE)
                                             (case case (daT,case xT,xaaT,xaaaT,daT of
    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                        daT,case xaT,xaaT,xaaaT,daT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w. xaaaa.
  case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                     | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                     | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                                | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        F    w)F
                                                | _  dioE) of
                                        P    w)P
                    | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        P    w)P
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                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                         xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            F    w)F
                                                | _  dioE)
                                              (case case (daT,case xT,xaaT,daT,xaaaT of
        P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
   daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                P xb  (w.
    xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                         xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                           xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            F    w)F
                                                | _  dioE)
                                              (case case (daT,case xT,xaaT,xaaaT,daT of
        P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
   daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                P xb  (w.
    xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                           xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                            xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            F    w)F
                                                | _  dioE) of
                                       F    w)F
                  | _  dioE of
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           P    w)P
                                                  | F xb  (w.
       xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                        P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,daT,xaaT,daT of
                                        P x  (x. case xaT,xT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
        P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                       (case case (daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                            | _  dioE)
                       (case case (daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
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                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
         P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                              | _  dioE) of
                    P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                | _  (x. dio)E,
                      xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                            | _  dioE)
                                          (case case (daT,case xT,xaaT,daT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
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                          | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
         F    w)F
                                        | _  dioE)
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     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                              (P , P )  (w.  w =  w)P
                                              | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                              | (F , P )  (w.  w =  w)F
                                              | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                              | (_, b)  dioE of
                                          P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                          | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                        | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                        | _  dioE) of
                                   P    w)P
                 | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P    w)P
                                          | F xb  (w.
     xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of
                            P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xaT,daT,xaaT,xaaaT of
                            P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
            F    w)F
                                          | _  dioE)
                                      (case case (daT,case xT,xaaT,daT,xaaaT of
       P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
  daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
```

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                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of
                             P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,daT,xaaaT of
                             P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                               | _  dioE)
                                            (case case (daT,case xT,xaaT,xaaaT,daT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
 daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of
                             P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,xaaaT,daT of
                             P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                               | _  dioE) of
                                         F    w)F
                  | _  dioE of
             F    w)F
                                                  | _  dioE)
                                                (case case (case case (daT,case xaT,daT,daT,daT of
                        P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                           | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,xaT,daT,daT of P   )T
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                                    | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,xT,daT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,xaT,daT,daT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                    | _  (x. dio)E,
               daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,xT,daT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                    | _  (x. dio)E,
               daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,daT,xT of P   )T | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                   daT,case xT,daT,daT,xaaT of
                                      P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
      P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,daT,xaaT of
      P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xaT,daT,daT,xaaT of
                                      P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                   daT,case xT,daT,daT,xaaT of
                                      P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
      P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,daT,xaaT of
      P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xaT,daT,xaaT,daT of
                                      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                   daT,case xT,daT,xaaT,daT of
                                      P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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                        P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                              | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                              | (_, b)  dioE of
                                         P    w)P
                        | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                           F    w)F
                        | _  dioE) of
                  P    w)P
| F xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,xT,daT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     daT,case xT,daT,daT,xaaT of
                                          P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                           P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             F    w)F
                           | _  dioE)
                      (case case (daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,daT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     daT,case xT,daT,daT,xaaT of
                                          P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                           P    w)P
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                            | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                            | _  dioE)
                        (case case (daT,case xaT,daT,xaaT,daT of
                                           P x  (x. case xaT,daT,xaaT,xT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,daT,xaaT,daT of
                                           P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                           | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
         P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                            | _  dioE) of
                    F    w)F
| _  dioE of
                                                P xb  (w.
       xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                   daT,case xT,daT,xaaT,daT of
                                        P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                  | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                                P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
         P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
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                                          F    w)F
                        | _  dioE)
                    (case case (daT,case xaT,xaaT,daT,daT of
                                       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                daT,case xT,xaaT,daT,daT of
                                       P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                 | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                        | _  dioE)
                    (case case (daT,case xaT,xaaT,daT,daT of
                                       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                daT,case xT,xaaT,daT,daT of
                                       P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                 | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                        | _  dioE) of
                  P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
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                    | _  (x. dio)E,
              xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                    | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        F    w)F
                                          | _  dioE)
                                       (case case (daT,case xaT,xaaT,daT,xaaaT of
   P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                   daT,case xT,xaaT,daT,xaaaT of
   P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                          P xb  (w. xaaaa.
  case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E,
              xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                    | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        F    w)F
                                          | _  dioE)
                                       (case case (daT,case xaT,xaaT,xaaaT,daT of
   P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                   daT,case xT,xaaT,xaaaT,daT of
   P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                          P xb  (w. xaaaa.
  case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E,
              xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                    | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
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        F    w)F
                                          | _  dioE) of
                                    P    w)P
                 | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
                   xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                     xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
          F    w)F
                                               | _  dioE)
                                          (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                        | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
          F    w)F
                                               | _  dioE)
                                          (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
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xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                          | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
         F    w)F
                                          | _  dioE) of
                                    F    w)F
              | _  dioE of
           P    w)P
                                               | F xb  (w.
       xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,xT,xaaT,daT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                            | _  dioE)
                       (case case (daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,xT,daT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
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                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
          P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                            | _  dioE)
                        (case case (daT,case xaT,xaaT,daT,daT of
                                           P x  (x. case xaT,xaaT,daT,xT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,xaaT,daT,daT of
                                           P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                           | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
          P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                            | _  dioE) of
                    P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                            | _  (x. dio)E,
                     xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                            | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
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                                                | _  dioE)
                                              (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                                | _  dioE)
                                              (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                                | _  dioE) of
                                          P    w)P
                  | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
       P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
       | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                      P xb  (w.
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xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                  xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of
                           P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                     xaaaaT,case xT,daT,xaaT,xaaaT of
                           P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                            | _  dioE)
                                         (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of
                           P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,daT,xaaaT of
                           P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                            | _  dioE)
                                         (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                          | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of
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                        P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                xaaaaT,case xT,xaaT,xaaaT,daT of
                        P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
      F    w)F
                                          | _  dioE) of
                                  F    w)F
            | _  dioE of
        F    w)F
                                              | _  dioE) of
                                        P    w)P
                        | F xa  (w. xa. case (case case (case case (daT,case xT,daT,daT,daT of
                    P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
              daT,case xaT,daT,daT,daT of P x  (x. case xaT,xT,daT,daT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                      P xa  (xa. case xT,xaT,daT,daT of P   )T
                                      | _  (x. dio)E,
                                xaaT,case xaT,daT,daT,daT of
                                      P x  (x. case xaT,xT,daT,daT of P   )T
                                      | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,xaT,daT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,xT,daT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                    | _  (x. dio)E,
              daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                      P xa  (xa. case xT,daT,xaT,daT of P   )T
                                      | _  (x. dio)E,
                                xaaT,case xaT,daT,daT,daT of
                                      P x  (x. case xaT,daT,xT,daT of P   )T
                                      | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
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                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
        | _  dioE)
     (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                         | _  (x. dio)E,
                   daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
           | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 F    w)F
           | _  dioE) of
    P xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                       P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
                                   daT,case xaT,daT,daT,xaaT of
                                       P x  (x. case xaT,xT,daT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
           P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
     xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                               | _  dioE)
                           (case case (daT,case xT,daT,daT,xaaT of
                                          P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                      daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,daT,xT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xT,daT,xaaT,daT of
                                                 P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case xaT,daT,xaaT,daT of
                                                 P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
         P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE) of
                    P    w)P
 | F xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                                 P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case xaT,daT,daT,xaaT of
                                                 P x  (x. case xaT,xT,daT,xaaT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
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                                                | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                            | _  dioE)
                        (case case (daT,case xT,daT,daT,xaaT of
                                          P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,daT,xaaT of
                                          P x  (x. case xaT,daT,xT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                            | _  dioE)
                        (case case (daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,daT,xaaT,xT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                            P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
          P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                  | _  dioE) of
                          F    w)F
  | _  dioE of
                                                      P xb  (w.
       xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                           P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xaT,daT,xaaT,daT of
                                           P x  (x. case xaT,xT,xaaT,daT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
        P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    F    w)F
                               | _  dioE)
                          (case case (daT,case xT,xaaT,daT,daT of
                                           P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xaT,xaaT,daT,daT of
                                           P x  (x. case xaT,xaaT,xT,daT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    F    w)F
                               | _  dioE)
                          (case case (daT,case xT,xaaT,daT,daT of
                                           P xa  (xa. case xT,xaaT,daT,xaT of P   )T
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                                        | _  (x. dio)E,
                                    daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
         P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                              | _  dioE) of
                        P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                     xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                | _  (x. dio)E,
                       xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           F    w)F
                                                | _  dioE)
                                             (case case (daT,case xT,xaaT,daT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                     xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
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            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                              | _  dioE)
                                           (case case (daT,case xT,xaaT,xaaaT,daT of
       P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
  daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                         xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                              | _  dioE) of
                                        P    w)P
                    | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
   daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   P xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                         xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P    w)P
                                                | F xb  (w.
     xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of
                                P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                           xaaaaT,case xaT,daT,xaaT,xaaaT of
                                P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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              | (_, b)  dioE of
          F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,daT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                          | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of
                            P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xaT,xaaT,daT,xaaaT of
                            P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,xaaaT,daT of
     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                          | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of
                            P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xaT,xaaT,xaaaT,daT of
                            P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                          | _  dioE) of
                                    F    w)F
             | _  dioE of
        P    w)P
                                                  | F xb
(w. xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                       P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                  daT,case xaT,daT,xaaT,daT of
                                       P x  (x. case xaT,xT,xaaT,daT of P   )T
                                       | _  (x. dio)E) of
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                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                              | (F , _)  dioE | (_, b)  dioE of
                          P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
        P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                       | (_, b)  dioE of
                                                  F    w)F
                          | _  dioE)
                      (case case (daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                     | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                     | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                 P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
          P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   F    w)F
                          | _  dioE)
                      (case case (daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                     | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                     | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
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                                                | (_, b)  dioE of
                                            P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                          | _  dioE) of
                 P xb  (w. xaaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                       daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w. xaaaa.
   case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                      | _  (x. dio)E,
              xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                      | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                                | _  dioE)
                                            (case case (daT,case xT,xaaT,daT,xaaaT of
    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                       daT,case xaT,xaaT,daT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w. xaaaa.
   case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                      | _  (x. dio)E,
              xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                      | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                                | _  dioE)
                                            (case case (daT,case xT,xaaT,xaaaT,daT of
    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
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                                                          daT,case xaT,xaaT,xaaaT,daT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                          | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                 P xb  (w. xaaaa.
   case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                      | _  (x. dio)E,
              xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                      | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                 | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                                 | _  dioE) of
                                       P    w)P
                 | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                    P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                    | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E,
                      xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                                    | _  dioE)
                                                 (case case (daT,case xT,xaaT,daT,xaaaT of
      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                    P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                              | _  dioE)
                                         (case case (daT,case xT,xaaT,xaaaT,daT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                              | _  dioE) of
                                       F    w)F
            | _  dioE of
      F    w)F
                                                 | _  dioE)
                                                (case case (case case (daT,case xaT,daT,daT,daT of
                           P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                    daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                              P x  (x. case xaT,xT,daT,daT of P   )T
                                              | _  (x. dio)E,
                                       xaaT,case xT,daT,daT,daT of
                                              P xa  (xa. case xT,xaT,daT,daT of P   )T
                                              | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
          | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                               P x  (x. case xaT,xT,daT,daT of P   )T
                                               | _  (x. dio)E,
                                        xaaT,case xT,daT,daT,daT of
                                               P xa  (xa. case xT,xaT,daT,daT of P   )T
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                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,xT,daT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,xaT,daT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE)
    (case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,daT,xT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                  daT,case xT,daT,daT,xaaT of
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                                        P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
       P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
         P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                              | _  dioE)
                         (case case (daT,case xaT,daT,daT,xaaT of
                                        P x  (x. case xaT,daT,xT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,daT,daT,xaaT of
                                        P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
       P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
         P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                              | _  dioE)
                         (case case (daT,case xaT,daT,xaaT,daT of
                                        P x  (x. case xaT,daT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,daT,xaaT,daT of
                                        P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
       P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                                 | _  dioE) of
                        P    w)P
 | F xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                               P x  (x. case xaT,xT,daT,xaaT of P   )T
                                               | _  (x. dio)E,
                                         daT,case xT,daT,daT,xaaT of
                                               P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                                  | _  dioE)
                             (case case (daT,case xaT,daT,daT,xaaT of
                                               P x  (x. case xaT,daT,xT,xaaT of P   )T
                                               | _  (x. dio)E,
                                         daT,case xT,daT,daT,xaaT of
                                               P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
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                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                | _  dioE)
                             (case case (daT,case xaT,daT,xaaT,daT of
                                                 P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case xT,daT,xaaT,daT of
                                                 P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                   P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
    xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                   | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
            P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
      xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T
            | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                | _  dioE) of
                        F    w)F
  | _  dioE of
                                                 P xb  (w.
         xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                              P x  (x. case xaT,xT,xaaT,daT of P   )T
                                              | _  (x. dio)E,
                                        daT,case xT,daT,xaaT,daT of
                                              P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                              | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                   | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
    xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
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                          | _  dioE)
                        (case case (daT,case xaT,xaaT,daT,daT of
                                           P x  (x. case xaT,xaaT,xT,daT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,xaaT,daT,daT of
                                           P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
         P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                          | _  dioE)
                        (case case (daT,case xaT,xaaT,daT,daT of
                                           P x  (x. case xaT,xaaT,daT,xT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,xaaT,daT,daT of
                                           P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                           | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
         P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                          | _  dioE) of
                    P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
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xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                            | _  dioE)
                                          (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                            | _  dioE)
                                          (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
```

```
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                          | _  dioE) of
                                   P    w)P
               | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
     | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                                 | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of
                             P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xT,daT,xaaT,xaaaT of
                             P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                               | _  dioE)
                                            (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
     | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                                 | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of
                             P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xT,xaaT,daT,xaaaT of
                             P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                               | _  dioE)
                                            (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
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      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P    w)P
                                                | F xb  (w.
    xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of
                               P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                        xaaaaT,case xT,xaaT,xaaaT,daT of
                               P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            F    w)F
                                                | _  dioE) of
                                          F    w)F
                  | _  dioE of
              P    w)P
                                                    | F xb
  (w. xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                       P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                  daT,case xT,daT,xaaT,daT of
                                       P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                              | (F , _)  dioE | (_, b)  dioE of
                         P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
     P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,daT of
     P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                         | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
       P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                         | _  dioE)
                      (case case (daT,case xaT,xaaT,daT,daT of
                                       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                  daT,case xT,xaaT,daT,daT of
                                       P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                              | (F , _)  dioE | (_, b)  dioE of
                         P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
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                                                    xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                           | _  dioE)
                      (case case (daT,case xaT,xaaT,daT,daT of
                                    P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                 daT,case xT,xaaT,daT,daT of
                                    P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                    | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                               | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                           | _  dioE) of
                  P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,daT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                               | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                          | _  dioE)
                                       (case case (daT,case xaT,xaaT,daT,xaaaT of
   P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,xaaT,daT,xaaaT of
   P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w. xaaaa.
  case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                     | _  (x. dio)E,
            xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                     | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        F    w)F
                                          | _  dioE)
                                       (case case (daT,case xaT,xaaT,xaaaT,daT of
   P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                    daT,case xT,xaaT,xaaaT,daT of
   P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w. xaaaa.
  case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                     | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                     | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        F    w)F
                                          | _  dioE) of
                                    P    w)P
                | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
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xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                            | _  dioE)
                                          (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                            | _  dioE)
                                          (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
```

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                        | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
      F    w)F
                                          | _  dioE) of
                                  F    w)F
            | _  dioE of
        F    w)F
                                                 | _  dioE) of
                                           F    w)F
                        | _  dioE of
                    P    w)P
     | F x  (w. x. case case (case case (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                               P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                    | _  (x. dio)E,
               xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                               | F xa  (w.
  xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                    | _  (x. dio)E,
               xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
       F    w)F
                                               | _  dioE)
                                            (case case (daT,case xT,daT,daT,daT of
     P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
daT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                               P xa  (w.
 xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                    | _  (x. dio)E,
               xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                               | F xa  (w.
  xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                    | _  (x. dio)E,
                xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                    | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
       F    w)F
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                                                | _  dioE)
                                               (case case (daT,case xT,daT,daT,daT of
      P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
  daT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                   P xa  (w.
   xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                         | _  (x. dio)E,
                  xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                                | F xa  (w.
     xa. case case (xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                           | _  (x. dio)E,
                    xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                                | _  dioE) of
                                            P xa  (w. xa.
case (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                         | _  (x. dio)E,
                     daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                           P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                           | _  (x. dio)E,
                                      xaaT,case daT,daT,daT,xaT of
                                           P x  (x. case daT,xT,daT,xaT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                           P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                           | _  (x. dio)E,
                                      xaaT,case daT,daT,daT,xaT of
                                           P x  (x. case daT,xT,daT,xaT of P   )T
                                           | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE)
     (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                         | _  (x. dio)E,
                    daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                           P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
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                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                        | _  (x. dio)E,
                daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P    w)P
                                    | F xa  (w. xa.
  case (case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,xT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
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    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,xT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,xaT of
                                        P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,daT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,daT,xaT,daT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
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        | _  dioE) of
F    w)F
                                      | _  dioE of
                                   P xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                         P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                    daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E,
                                      xaaT,case daT,daT,xaT,daT of
                                           P x  (x. case daT,xT,xaT,daT of P   )T
                                           | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                             P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                             | _  (x. dio)E,
                                        xaaT,case daT,daT,xaT,daT of
                                             P x  (x. case daT,xT,xaT,daT of P   )T
                                             | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 F    w)F
          | _  dioE)
      (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                         | _  (x. dio)E,
                    daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                           P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                           | _  (x. dio)E,
                                      xaaT,case daT,xaT,daT,daT of
                                           P x  (x. case daT,xaT,xT,daT of P   )T
                                           | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                             P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                             | _  (x. dio)E,
                                        xaaT,case daT,xaT,daT,daT of
                                             P x  (x. case daT,xaT,xT,daT of P   )T
                                             | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 F    w)F
          | _  dioE)
      (case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                         | _  (x. dio)E,
                    daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                         | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
```

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        P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                  daT,case daT,daT,xaT,xaaT of
                                      P x  (x. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                              P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                                F    w)F
                             | _  dioE)
                        (case case (daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
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                                                P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE)
                           (case case (daT,case xT,xaT,xaaT,daT of
                                                 P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
                                       daT,case daT,xaT,xaaT,daT of
                                                 P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                 | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE) of
                    P    w)P
 | F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                                   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                                   | _  (x. dio)E,
                                         daT,case daT,daT,xaT,xaaT of
                                                   P x  (x. case daT,xT,xaT,xaaT of P   )T
                                                   | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                    P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
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                                                  | (_, b)  dioE of
                                             F    w)F
                          | _  dioE)
                      (case case (daT,case xT,xaT,daT,xaaT of
                                             P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                             | _  (x. dio)E,
                                        daT,case daT,xaT,daT,xaaT of
                                             P x  (x. case daT,xaT,xT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                          | _  dioE)
                      (case case (daT,case xT,xaT,xaaT,daT of
                                             P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                             | _  (x. dio)E,
                                        daT,case daT,xaT,xaaT,daT of
                                             P x  (x. case daT,xaT,xaaT,xT of P   )T
                                             | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                          | _  dioE) of
                    F    w)F
| _  dioE of
                                                P    w)P
                               | F xa  (w. xa. case case (case case (daT,case xT,daT,xaT,daT of
                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
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              daT,case daT,daT,xaT,daT of P x  (x. case daT,xT,xaT,daT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                      P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,daT,xaT,daT of
                                      P x  (x. case daT,xT,xaT,daT of P   )T
                                      | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                       P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,xaT,daT of
                                       P x  (x. case daT,xT,xaT,daT of P   )T
                                       | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        F    w)F
    | _  dioE)
(case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                      P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xaT,daT,daT of
                                      P x  (x. case daT,xaT,xT,daT of P   )T
                                      | _  (x. dio)E) of
                            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                            | (P , _)  dioE | (F , P )  (w.  w =  w)F
                            | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                       P    w)P
    | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                       P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xaT,daT,daT of
                                       P x  (x. case daT,xaT,xT,daT of P   )T
                                       | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        F    w)F
    | _  dioE)
(case case (daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                    | _  (x. dio)E,
               daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                    | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
         | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                      P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xaT,daT,daT of
                                      P x  (x. case daT,xaT,daT,xT of P   )T
```

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                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
          | F xb  (w. xaa. case case (xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
          | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                     P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                     | _  (x. dio)E,
                                daT,case daT,daT,xaT,xaaT of
                                     P x  (x. case daT,xT,xaT,xaaT of P   )T
                                     | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                            | _  dioE)
                       (case case (daT,case xT,xaT,daT,xaaT of
                                     P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                     | _  (x. dio)E,
                                daT,case daT,xaT,daT,xaaT of
                                     P x  (x. case daT,xaT,xT,xaaT of P   )T
                                     | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
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          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                 | _  dioE)
                              (case case (daT,case xT,xaT,xaaT,daT of
                                                   P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                   | _  (x. dio)E,
                                              daT,case daT,xaT,xaaT,daT of
                                                   P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                   | _  (x. dio)E) of
                                         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                         | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                         | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
            P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
    xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
            | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                    | _  dioE) of
                        P    w)P
   | F xb  (w. xaa. case (case case (daT,case xT,daT,xaT,xaaT of
                                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                                      | _  (x. dio)E,
                                                 daT,case daT,daT,xaT,xaaT of
                                                      P x  (x. case daT,xT,xaT,xaaT of P   )T
                                                      | _  (x. dio)E) of
                                           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                           | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                           | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                      P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
            P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
            | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                  P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaT,xaaT of
              P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case daT,daT,xaT,xaaT of P x  (x. case daT,xT,xaT,xaaT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                F    w)F
                                 | _  dioE)
                              (case case (daT,case xT,xaT,daT,xaaT of
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                                                P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                                | _  (x. dio)E,
                                           daT,case daT,xaT,daT,xaaT of
                                                P x  (x. case daT,xaT,xT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,daT,xaaT of
            P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case daT,xaT,daT,xaaT of P x  (x. case daT,xaT,xT,xaaT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                    F    w)F
                                  | _  dioE)
                             (case case (daT,case xT,xaT,xaaT,daT of
                                                P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                | _  (x. dio)E,
                                           daT,case daT,xaT,xaaT,daT of
                                                P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
    xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,xaT,xaaT,daT of
            P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
      xaaaT,case daT,xaT,xaaT,daT of P x  (x. case daT,xaT,xaaT,xT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                    F    w)F
                                  | _  dioE) of
                        F    w)F
  | _  dioE of
                                                     F    w)F
                                  | _  dioE)
                                 (case case (case case (daT,case daT,daT,daT,daT of
       P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
  daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                P xa  (w.
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xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
  xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                                | _  dioE)
                                              (case case (daT,case daT,daT,daT,daT of
     P x  (x. case daT,daT,xT,daT,daT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT,daT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
  xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,xT,daT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT,daT of P   )T
                       | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                                | _  dioE)
                                              (case case (daT,case daT,daT,daT,daT of
     P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
daT,case xT,daT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                P xa  (w.
 xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                     | _  (x. dio)E,
                xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
     P    w)P
                                                | F xa  (w.
  xa. case case (xaT,case daT,daT,daT,daT of P x  (x. case daT,daT,daT,xT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
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                          | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
            F    w)F
                                                  | _  dioE) of
                                             P xa  (w. xa.
case (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E,
                   daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                                       xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,xT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
          | _  dioE)
      (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                          | _  (x. dio)E,
                   daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                                       xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                       xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
          | _  dioE)
      (case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                          | _  (x. dio)E,
                   daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                       P x  (x. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                                  xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
         | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                       P x  (x. case daT,daT,xaT,xT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,xaT,daT of
                                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
         | _  dioE) of
P    w)P
                                    | F xa  (w. xa.
  case (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E,
                     daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                          | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,xT,daT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
           | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                         P x  (x. case daT,xT,daT,xaT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                         P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                         | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
           | _  dioE)
        (case case (daT,case daT,daT,daT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                          | _  (x. dio)E,
                     daT,case xT,daT,daT,xaT of P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                          | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           P xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                       P x  (x. case daT,daT,xT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,xaT of
                                       P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                       | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                         P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,daT,daT,xaT of
                                          P x  (x. case daT,daT,xT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,xaT of
                                          P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
      | _  dioE)
    (case case (daT,case daT,daT,xaT,daT of P x  (x. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                        | _  (x. dio)E) of
           (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
           | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
           | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,daT,xaT,xT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           F    w)F
      | _  dioE) of
F     w)F
                                       | _  dioE of
                                    P xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                              P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                        daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                              | _  (x. dio)E) of
                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                  | (_, b)  dioE of
      P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,xT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
      | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                          P x  (x. case daT,xT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
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                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,xT,daT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
        | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xT,xaT,daT,daT of
                                          P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                      P x  (x. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                  daT,case xT,daT,xaT,xaaT of
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                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                             | _  dioE)
                        (case case (daT,case daT,xaT,daT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaT,daT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                              P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                             | _  dioE)
                        (case case (daT,case daT,xaT,xaaT,daT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaT,xaaT,daT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
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       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
       | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                           | _  dioE) of
                  P    w)P
| F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                          P x  (x. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     daT,case xT,daT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
         P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                           | _  dioE)
                      (case case (daT,case daT,xaT,daT,xaaT of
                                          P x  (x. case daT,xaT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                     daT,case xT,xaT,daT,xaaT of
                                          P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                          | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
          P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                    | _  dioE)
                                (case case (daT,case daT,xaT,xaaT,daT of
                                                  P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                  | _  (x. dio)E,
                                        daT,case xT,xaT,xaaT,daT of
                                                  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                  | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                    | _  dioE) of
                      F    w)F
| _  dioE of
                                                P    w)P
                                    | F xa  (w. xa. case case (case case (daT,case daT,daT,xaT,daT of
                             P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                         daT,case xT,daT,xaT,daT of P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                             | _  (x. dio)E) of
                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                  | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
                                              P x  (x. case daT,xT,xaT,daT of P   )T
                                              | _  (x. dio)E,
                                        xaaT,case xT,daT,xaT,daT of
                                              P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                              | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P    w)P
          | F xb  (w. xaa. case case (xaaT,case daT,daT,xaT,daT of
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                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                    | _  (x. dio)E,
               daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case daT,xaT,daT,daT of P x  (x. case daT,xaT,daT,xT of P   )T
                    | _  (x. dio)E,
               daT,case xT,xaT,daT,daT of P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P    w)P
    | F xb  (w. xaa. case case (xaaT,case daT,xaT,daT,daT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,xaT,daT,daT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE) of
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 P xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                       P x  (x. case daT,xT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,daT,xaT,xaaT of
                                       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                             | _  dioE)
                        (case case (daT,case daT,xaT,daT,xaaT of
                                       P x  (x. case daT,xaT,xT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,xaT,daT,xaaT of
                                       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                       | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
       | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                F    w)F
                             | _  dioE)
                        (case case (daT,case daT,xaT,xaaT,daT of
                                       P x  (x. case daT,xaT,xaaT,xT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,xaT,xaaT,daT of
                                       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                       | _  (x. dio)E) of
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                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
          P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
    xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                             | _  dioE) of
                      P    w)P
   | F xb  (w. xaa. case (case case (daT,case daT,daT,xaT,xaaT of
                                           P x  (x. case daT,xT,xaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,daT,xaT,xaaT of
                                           P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                           | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
          P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case daT,daT,xaT,xaaT of
            P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case xT,daT,xaT,xaaT of P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                     F    w)F
                                | _  dioE)
                             (case case (daT,case daT,xaT,daT,xaaT of
                                           P x  (x. case daT,xaT,xT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,xaT,daT,xaaT of
                                           P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                           | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
          P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
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                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,daT,xaaT of
              P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case xT,xaT,daT,xaaT of P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                  F    w)F
                                  | _  dioE)
                             (case case (daT,case daT,xaT,xaaT,daT of
                                                  P x  (x. case daT,xaT,xaaT,xT of P   )T
                                                  | _  (x. dio)E,
                                        daT,case xT,xaT,xaaT,daT of
                                                  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                                  | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
            P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
     xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
            | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case daT,xaT,xaaT,daT of
              P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
      xaaaT,case xT,xaT,xaaT,daT of P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
              | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                  F    w)F
                                  | _  dioE) of
                        F    w)F
   | _  dioE of
                                                      F    w)F
                                       | _  dioE) of
                                  P xa  (w. xa. case (case case (case case (daT,case xT,daT,daT,daT of
                             P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                       daT,case xaT,daT,daT,daT of P x  (x. case xaT,xT,daT,daT of P   )T
                             | _  (x. dio)E) of
                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                  | (_, b)  dioE of
            P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                                 P xa  (xa. case xT,xaT,daT,daT of P   )T
                                                 | _  (x. dio)E,
                                           xaaT,case xaT,daT,daT,daT of
                                                 P x  (x. case xaT,xT,daT,daT of P   )T
                                                 | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P    w)P
            | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                                   P xa  (xa. case xT,xaT,daT,daT of P   )T
                                                   | _  (x. dio)E,
                                             xaaT,case xaT,daT,daT,daT of
                                                   P x  (x. case xaT,xT,daT,daT of P   )T
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                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                        | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,xT,daT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                        | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                        P xa  (xa. case xT,daT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                        P x  (x. case xaT,daT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                      xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                      P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                  daT,case xaT,daT,daT,xaaT of
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                                        P x  (x. case xaT,xT,daT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                               | _  dioE)
                           (case case (daT,case xT,daT,daT,xaaT of
                                        P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                     daT,case xaT,daT,daT,xaaT of
                                        P x  (x. case xaT,daT,xT,xaaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                               | _  dioE)
                           (case case (daT,case xT,daT,xaaT,daT of
                                        P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                     daT,case xaT,daT,xaaT,daT of
                                        P x  (x. case xaT,daT,xaaT,xT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
        P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             F    w)F
                                | _  dioE) of
                     P    w)P
 | F xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                             P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                             | _  (x. dio)E,
                                          daT,case xaT,daT,daT,xaaT of
                                             P x  (x. case xaT,xT,daT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
        P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                                | _  dioE)
                           (case case (daT,case xT,daT,daT,xaaT of
                                             P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                             | _  (x. dio)E,
                                          daT,case xaT,daT,daT,xaaT of
                                             P x  (x. case xaT,daT,xT,xaaT of P   )T
                                             | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
        P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T
          | _  (x. dio)E) of
```

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                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                | _  dioE)
                              (case case (daT,case xT,daT,xaaT,daT of
                                                   P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                   | _  (x. dio)E,
                                              daT,case xaT,daT,xaaT,daT of
                                                   P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                   | _  (x. dio)E) of
                                         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                         | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                         | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
          P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
   xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
            P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
      xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T
            | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                | _  dioE) of
                        F    w)F
  | _  dioE of
                                                P xb  (w.
         xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                              P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                              | _  (x. dio)E,
                                         daT,case xaT,daT,xaaT,daT of
                                              P x  (x. case xaT,xT,xaaT,daT of P   )T
                                              | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
        P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
          P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
    xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
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                          | _  dioE)
                        (case case (daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
         P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                          | _  dioE)
                        (case case (daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
         P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                          | _  dioE) of
                    P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
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xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                          | F xb  (w.
  xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                       | _  dioE)
                                    (case case (daT,case xT,xaaT,daT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                          | F xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
         F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,xaaaT,daT of
     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                          | F xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
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                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
         F    w)F
                                          | _  dioE) of
                                    P    w)P
                 | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                   xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of
                             P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xaT,daT,xaaT,xaaaT of
                             P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           F    w)F
                                               | _  dioE)
                                          (case case (daT,case xT,xaaT,daT,xaaaT of
      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E,
                   xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of
                             P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                      xaaaaT,case xaT,xaaT,daT,xaaaT of
                             P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           F    w)F
                                               | _  dioE)
                                          (case case (daT,case xT,xaaT,xaaaT,daT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
```

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                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           P    w)P
                                               | F xb  (w.
    xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of
                               P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                         xaaaaT,case xaT,xaaT,xaaaT,daT of
                               P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                  | (_, b)  dioE of
             F    w)F
                                               | _  dioE) of
                                         F    w)F
                  | _  dioE of
               P    w)P
                                                     | F xb
(w. xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                        P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                    daT,case xaT,daT,xaaT,daT of
                                        P x  (x. case xaT,xT,xaaT,daT of P   )T
                                        | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xaT,daT,xaaT,daT of
    P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                       | (_, b)  dioE of
                                                  P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                        xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                         | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                         | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                         | (_, b)  dioE of
                                                    F    w)F
                           | _  dioE)
                        (case case (daT,case xT,xaaT,daT,daT of
                                               P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                               | _  (x. dio)E,
                                           daT,case xaT,xaaT,daT,daT of
                                               P x  (x. case xaT,xaaT,xT,daT of P   )T
                                               | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                     | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                     | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
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                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              F    w)F
                                | _  dioE)
                            (case case (daT,case xT,xaaT,daT,daT of
                                                P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                                | _  (x. dio)E,
                                          daT,case xaT,xaaT,daT,daT of
                                                P x  (x. case xaT,xaaT,daT,xT of P   )T
                                                | _  (x. dio)E) of
                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                     | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                     | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
        P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                                | _  dioE) of
                    P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                      daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                                P xb  (w. xaaaa.
   case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                | F xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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            | (_, b)  dioE of
       F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,daT,xaaaT of
   P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,xaaT,daT,xaaaT of
   P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                             P xb  (w. xaaaa.
  case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                     | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                     | _  (x. dio)E) of
      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
      | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
       F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,xaaaT,daT of
   P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,xaaT,xaaaT,daT of
   P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                             P xb  (w. xaaaa.
  case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                     | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                     | _  (x. dio)E) of
      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
      | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
       F    w)F
                                          | _  dioE) of
                                    P    w)P
               | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                            P xb  (w.
xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
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                          | _  (x. dio)E,
                  xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E,
                   xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                            | _  dioE)
                                          (case case (daT,case xT,xaaT,daT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                          | _  (x. dio)E,
                   xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                            | _  (x. dio)E,
                     xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                            | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                            | _  dioE)
                                          (case case (daT,case xT,xaaT,xaaaT,daT of
     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                          | _  (x. dio)E,
                   xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                          | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                            | _  (x. dio)E,
                     xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                            | _  (x. dio)E) of
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        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    F    w)F
                                       | _  dioE) of
                               F    w)F
          | _  dioE of
      F    w)F
                                              | _  dioE)
                                             (case case (case case (daT,case xaT,daT,daT,daT of
                    P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,daT of
                                       P xa  (xa. case xT,xaT,daT,daT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                         P x  (x. case xaT,xT,daT,daT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                         P xa  (xa. case xT,xaT,daT,daT of P   )T
                                         | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                    | _  (x. dio)E,
                daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                    | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
        | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                       P x  (x. case xaT,daT,xT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,daT of
                                       P xa  (xa. case xT,daT,xaT,daT of P   )T
                                       | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                        P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                         P x  (x. case xaT,daT,xT,daT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                         P xa  (xa. case xT,daT,xaT,daT of P   )T
                                         | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          F    w)F
    | _  dioE)
(case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
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                        | _  (x. dio)E,
                   daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                        | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                       P x  (x. case xaT,daT,daT,xT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,daT of
                                       P xa  (xa. case xT,daT,daT,xaT of P   )T
                                       | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P    w)P
          | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                         P x  (x. case xaT,daT,daT,xT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                         P xa  (xa. case xT,daT,daT,xaT of P   )T
                                         | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               F    w)F
          | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case xT,daT,daT,xaaT of
                                      P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P
                                                   | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                   | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                                P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                             | _  dioE)
                        (case case (daT,case xaT,daT,daT,xaaT of
                                         P x  (x. case xaT,daT,xT,xaaT of P   )T
                                         | _  (x. dio)E,
                                    daT,case xT,daT,daT,xaaT of
                                         P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                         | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
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xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                                 | _  dioE)
                             (case case (daT,case xaT,daT,xaaT,daT of
                                                 P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case xT,daT,xaaT,daT of
                                                 P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                                 | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                                 | _  dioE) of
                        P    w)P
 | F xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                               P x  (x. case xaT,xT,daT,xaaT of P   )T
                                               | _  (x. dio)E,
                                         daT,case xT,daT,daT,xaaT of
                                               P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                               | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
            P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
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  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                              | _  dioE)
                          (case case (daT,case xaT,daT,daT,xaaT of
                                                P x  (x. case xaT,daT,xT,xaaT of P   )T
                                                | _  (x. dio)E,
                                             daT,case xT,daT,daT,xaaT of
                                                P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                              | _  dioE)
                          (case case (daT,case xaT,daT,xaaT,daT of
                                                P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                | _  (x. dio)E,
                                             daT,case xT,daT,xaaT,daT of
                                                P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T
          | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
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                                | _  dioE) of
                          F    w)F
  | _  dioE of
                                                          P xb  (w.
        xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                             P x  (x. case xaT,xT,xaaT,daT of P   )T
                                             | _  (x. dio)E,
                                       daT,case xT,daT,xaaT,daT of
                                             P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                             | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                       (P , P )  (w.  w =  w)P
                                                       | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                       | (F , P )  (w.  w =  w)F
                                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                       | (_, b)  dioE of
                                                  P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   F    w)F
                               | _  dioE)
                          (case case (daT,case xaT,xaaT,daT,daT of
                                             P x  (x. case xaT,xaaT,xT,daT of P   )T
                                             | _  (x. dio)E,
                                       daT,case xT,xaaT,daT,daT of
                                             P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                             | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                       (P , P )  (w.  w =  w)P
                                                       | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                       | (F , P )  (w.  w =  w)F
                                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                       | (_, b)  dioE of
                                                  P    w)P
                               | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
          P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                        (P , P )  (w.  w =  w)P
                                                        | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                        | (F , P )  (w.  w =  w)F
                                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                        | (_, b)  dioE of
                                                   F    w)F
                               | _  dioE)
                          (case case (daT,case xaT,xaaT,daT,daT of
                                             P x  (x. case xaT,xaaT,daT,xT of P   )T
                                             | _  (x. dio)E,
                                       daT,case xT,xaaT,daT,daT of
                                             P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                             | _  (x. dio)E) of
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                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
         P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                             | _  dioE) of
                    P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          P    w)P
                                                 | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E,
                      xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
            F    w)F
                                               | _  dioE)
                                            (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          P    w)P
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                                                | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                                | _  dioE)
                                              (case case (daT,case xaT,xaaT,xaaaT,daT of
       P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
  daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           P    w)P
                                                | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                                | _  dioE) of
                                        P    w)P
                     | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
         P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
    daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
         | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  P xb  (w.
  xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           P    w)P
                                                  | F xb  (w.
    xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of
                               P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                         xaaaaT,case xT,daT,xaaT,xaaaT of
                               P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                  | (_, b)  dioE of
             F    w)F
                                                  | _  dioE)
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                                          (case case (daT,case xaT,xaaT,daT,xaaaT of
      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of
                               P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                        xaaaaT,case xT,xaaT,daT,xaaaT of
                               P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
           F    w)F
                                                | _  dioE)
                                          (case case (daT,case xaT,xaaT,xaaaT,daT of
      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of
                               P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                        xaaaaT,case xT,xaaT,xaaaT,daT of
                               P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
           F    w)F
                                                | _  dioE) of
                                           F    w)F
               | _  dioE of
           P    w)P
                                                     | F xb
(w. xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                       P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                  daT,case xT,daT,xaaT,daT of
                                       P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E) of
                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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                          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                          | (F , _)  dioE | (_, b)  dioE of
                      P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
    P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,daT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                      | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                      | _  dioE)
                  (case case (daT,case xaT,xaaT,daT,daT of
                                      P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                 daT,case xT,xaaT,daT,daT of
                                      P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                          | _  dioE)
                      (case case (daT,case xaT,xaaT,daT,daT of
                                          P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                     daT,case xT,xaaT,daT,daT of
                                          P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                    | (F , _)  dioE | (_, b)  dioE of
                               P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                             P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
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       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                           | _  dioE) of
                  P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                       daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                      | _  (x. dio)E,
             xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                      | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                               | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                            | _  (x. dio)E,
                   xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                            | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
          F    w)F
                                            | _  dioE)
                                         (case case (daT,case xaT,xaaT,daT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                       daT,case xT,xaaT,daT,xaaaT of
    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                      | _  (x. dio)E,
             xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                      | _  (x. dio)E) of
        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
        | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                               | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                            | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                            | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
          F    w)F
                                            | _  dioE)
                                         (case case (daT,case xaT,xaaT,xaaaT,daT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                       daT,case xT,xaaT,xaaaT,daT of
    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P xb  (w. xaaaa.
  case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                    | _  (x. dio)E) of
      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
      | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                              | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                        | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                              | _  dioE) of
                                        P    w)P
               | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
                  xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                            | _  (x. dio)E,
                      xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                            | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         F    w)F
                                                | _  dioE)
                                             (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                        | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       P    w)P
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                                                | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           F    w)F
                                               | _  dioE)
                                            (case case (daT,case xaT,xaaT,xaaaT,daT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                       xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                               | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                        xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           F    w)F
                                               | _  dioE) of
                                        F    w)F
                 | _  dioE of
             F    w)F
                                                       | _  dioE) of
                                                 P    w)P
                                  | F xa  (w. xa. case (case case (case case (daT,case xT,daT,daT,daT of
                                       P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
             P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                                 P xa  (xa. case xT,xaT,daT,daT of P   )T
                                                 | _  (x. dio)E,
                                            xaaT,case xaT,daT,daT,daT of
                                                 P x  (x. case xaT,xT,daT,daT of P   )T
                                                 | _  (x. dio)E) of
                                       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                       | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                       | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                  P    w)P
           | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                                  P xa  (xa. case xT,xaT,daT,daT of P   )T
                                                  | _  (x. dio)E,
                                             xaaT,case xaT,daT,daT,daT of
                                                  P x  (x. case xaT,xT,daT,daT of P   )T
                                                  | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
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                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                        | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,xT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                            P xa  (xa. case xT,daT,xaT,daT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case xaT,daT,daT,daT of
                                            P x  (x. case xaT,daT,xT,daT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE)
    (case case (daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                        | _  (x. dio)E,
                  daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                        | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                          P xa  (xa. case xT,daT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xaT,daT,daT,daT of
                                          P x  (x. case xaT,daT,daT,xT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                              P    w)P
        | F xb  (w. xaa. case case (xaaT,case xT,daT,daT,daT of
                                            P xa  (xa. case xT,daT,daT,xaT of P   )T
                                            | _  (x. dio)E,
                                      xaaT,case xaT,daT,daT,daT of
                                            P x  (x. case xaT,daT,daT,xT of P   )T
                                            | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                F    w)F
        | _  dioE) of
P xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                      P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                daT,case xaT,daT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T
                                      | _  (x. dio)E) of
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                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xT,daT,daT,xaaT of
                                                 P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                                 | _  (x. dio)E,
                                       daT,case xaT,daT,daT,xaaT of
                                                 P x  (x. case xaT,daT,xT,xaaT of P   )T
                                                 | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
         P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T
         | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                             | _  dioE)
                          (case case (daT,case xT,daT,xaaT,daT of
                                                 P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                 | _  (x. dio)E,
                                       daT,case xaT,daT,xaaT,daT of
                                                 P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                 | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
```

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                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
          P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
    xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                  | _  dioE) of
                        P    w)P
   | F xb  (w. xaa. case (case case (daT,case xT,daT,daT,xaaT of
                                                P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                                | _  (x. dio)E,
                                           daT,case xaT,daT,daT,xaaT of
                                                P x  (x. case xaT,xT,daT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                   P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
            P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,xT,daT,xaaT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                  F    w)F
                                  | _  dioE)
                               (case case (daT,case xT,daT,daT,xaaT of
                                                P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                                | _  (x. dio)E,
                                           daT,case xaT,daT,daT,xaaT of
                                                P x  (x. case xaT,daT,xT,xaaT of P   )T
                                                | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                   P xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
          P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T
          | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                P    w)P
                                  | F xb  (w. xaaa. case case (xaaaT,case xT,daT,daT,xaaT of
            P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
      xaaaT,case xaT,daT,daT,xaaT of P x  (x. case xaT,daT,xT,xaaT of P   )T
            | _  (x. dio)E) of
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(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                    F    w)F
                                | _  dioE)
                              (case case (daT,case xT,daT,xaaT,daT of
                                                    P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                    | _  (x. dio)E,
                                                 daT,case xaT,daT,xaaT,daT of
                                                    P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                    | _  (x. dio)E) of
                                             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                             | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                             | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                          P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
          P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
   xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T
          | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                       P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
            P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
     xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,daT,xaaT,xT of P   )T
            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                    F    w)F
                                | _  dioE) of
                        F    w)F
   | _  dioE of
                                                       P xb
(w. xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                       daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,xT,xaaT,daT of P   )T
                                          | _  (x. dio)E) of
                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                    | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                    | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
   P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,daT,xaaT,daT of
   P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
     P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,daT,xaaT,daT of
     P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                   F    w)F
                              | _  dioE)
                            (case case (daT,case xT,xaaT,daT,daT of
                                                   P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                                   | _  (x. dio)E,
                                                daT,case xaT,xaaT,daT,daT of
                                                   P x  (x. case xaT,xaaT,xT,daT of P   )T
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                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                   | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                   | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                              | _  dioE)
                         (case case (daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,daT,xT of P   )T
                                        | _  (x. dio)E) of
                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                   | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                   | (F , _)  dioE | (_, b)  dioE of
                              P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
     P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,xaaT,daT,daT of
     P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                              | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                               F    w)F
                              | _  dioE) of
                         P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                       daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P xb  (w. xaaaa.
   case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
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  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,daT,xaaaT of
   P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,xaaT,daT,xaaaT of
   P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                          P xb  (w. xaaaa.
  case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                    | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                          | _  dioE)
                                       (case case (daT,case xT,xaaT,xaaaT,daT of
   P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,xaaT,xaaaT,daT of
   P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                          P xb  (w. xaaaa.
  case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                    | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E) of
       (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
       | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
  P    w)P
                                          | F xb  (w.
xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
       F    w)F
                                          | _  dioE) of
                                    P    w)P
               | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
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daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E,
                      xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                              | _  dioE)
                                            (case case (daT,case xT,xaaT,daT,xaaaT of
      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                               | _  (x. dio)E,
                      xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                               | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                              | _  dioE)
                                            (case case (daT,case xT,xaaT,xaaaT,daT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
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            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
          F    w)F
                                            | _  dioE) of
                                     F    w)F
                | _  dioE of
            P    w)P
                                                       | F xb
  (w. xaa. case case (case case (daT,case xT,daT,xaaT,daT of
                                           P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xaT,daT,xaaT,daT of
                                           P x  (x. case xaT,xT,xaaT,daT of P   )T
                                           | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                       xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                          | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                    P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xT,daT,xaaT,daT of
         P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,xaaT,daT of P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                           (P , P )  (w.  w =  w)P
                                                           | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                           | (F , P )  (w.  w =  w)F
                                                           | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                           | (_, b)  dioE of
                                                     F    w)F
                                | _  dioE)
                           (case case (daT,case xT,xaaT,daT,daT of
                                                P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                                | _  (x. dio)E,
                                           daT,case xaT,xaaT,daT,daT of
                                                P x  (x. case xaT,xaaT,xT,daT of P   )T
                                                | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                 P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                    P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
          P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
    xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E) of
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                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                F    w)F
                                 | _  dioE)
                              (case case (daT,case xT,xaaT,daT,daT of
                                                  P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                                  | _  (x. dio)E,
                                           daT,case xaT,xaaT,daT,daT of
                                                  P x  (x. case xaT,xaaT,daT,xT of P   )T
                                                  | _  (x. dio)E) of
                                        (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                        | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                        | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                    P xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P    w)P
                                    | F xb  (w. xaaa. case case (xaaaT,case xT,xaaT,daT,daT of
         P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,daT of P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  F    w)F
                                    | _  dioE) of
                              P xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                    | _  (x. dio)E,
                      xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                    | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
           P    w)P
                                                | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                 | _  (x. dio)E,
                       xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                 | _  (x. dio)E) of
                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                   | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                   | (_, b)  dioE of
             F    w)F
                                                | _  dioE)
                                             (case case (daT,case xT,xaaT,daT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
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                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                               | _  dioE)
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      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
 daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P xb  (w.
 xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                               | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                               | _  dioE) of
                                         P    w)P
                                    | F xb  (w. xaaa. case (case case (daT,case xT,daT,xaaT,xaaaT of
        P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
   daT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                  P xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E,
                       xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                              | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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            | (_, b)  dioE of
        P    w)P
                                            | F xb  (w.
   xaaaa. case case (xaaaaT,case xT,daT,xaaT,xaaaT of
                              P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                        xaaaaT,case xaT,daT,xaaT,xaaaT of
                              P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                            | _  dioE)
                                          (case case (daT,case xT,xaaT,daT,xaaaT of
        P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
   daT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                          P xb  (w.
    xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E,
                        xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           P    w)P
                                            | F xb  (w.
      xaaaa. case case (xaaaaT,case xT,xaaT,daT,xaaaT of
                              P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                          xaaaaT,case xaT,xaaT,daT,xaaaT of
                              P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                            | _  dioE)
                                          (case case (daT,case xT,xaaT,xaaaT,daT of
        P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
   daT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                          P xb  (w.
    xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                              | _  (x. dio)E,
                          xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                              | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
           P    w)P
                                            | F xb  (w.
      xaaaa. case case (xaaaaT,case xT,xaaT,xaaaT,daT of
                              P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                        xaaaaT,case xaT,xaaT,xaaaT,daT of
                              P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                            | _  dioE) of
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                                F    w)F
          | _  dioE of
      F    w)F
                                                 | _  dioE)
                                                (case case (case case (daT,case xaT,daT,daT,daT of
                    P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
               daT,case xT,daT,daT,daT of P xa  (xa. case xT,xaT,daT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,daT of
                                       P xa  (xa. case xT,xaT,daT,daT of P   )T
                                       | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                         P x  (x. case xaT,xT,daT,daT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                         P xa  (xa. case xT,xaT,daT,daT of P   )T
                                         | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                     | _  (x. dio)E,
               daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
          | (_, b)  dioE of
    P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                       P x  (x. case xaT,daT,xT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,daT,daT of
                                       P xa  (xa. case xT,daT,xaT,daT of P   )T
                                       | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P    w)P
    | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                         P x  (x. case xaT,daT,xT,daT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case xT,daT,daT,daT of
                                         P xa  (xa. case xT,daT,xaT,daT of P   )T
                                         | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            F    w)F
    | _  dioE)
(case case (daT,case xaT,daT,daT,daT of P x  (x. case xaT,daT,daT,xT of P   )T
                     | _  (x. dio)E,
               daT,case xT,daT,daT,daT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                     | _  (x. dio)E) of
          (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
          | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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          | (_, b)  dioE of
        P xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                    P x  (x. case xaT,daT,daT,xT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,daT,daT of
                                    P xa  (xa. case xT,daT,daT,xaT of P   )T
                                    | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P    w)P
        | F xb  (w. xaa. case case (xaaT,case xaT,daT,daT,daT of
                                      P x  (x. case xaT,daT,daT,xT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case xT,daT,daT,daT of
                                      P xa  (xa. case xT,daT,daT,xaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             F    w)F
        | _  dioE) of
 P xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                    P x  (x. case xaT,xT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                 daT,case xT,daT,daT,xaaT of
                                    P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                    | _  (x. dio)E) of
                              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                              | (P , _)  dioE | (F , P )  (w.  w =  w)F
                              | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
       P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                 F    w)F
                           | _  dioE)
                        (case case (daT,case xaT,daT,daT,xaaT of
                                      P x  (x. case xaT,daT,xT,xaaT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xT,daT,daT,xaaT of
                                      P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                      | _  (x. dio)E) of
                                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
       P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
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                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                           | _  dioE)
                      (case case (daT,case xaT,daT,xaaT,daT of
                                            P x  (x. case xaT,daT,xaaT,xT of P   )T
                                            | _  (x. dio)E,
                                       daT,case xT,daT,xaaT,daT of
                                            P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                            | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                             P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               F    w)F
                           | _  dioE) of
                  P    w)P
 | F xb  (w. xaa. case (case case (daT,case xaT,daT,daT,xaaT of
                                            P x  (x. case xaT,xT,daT,xaaT of P   )T
                                            | _  (x. dio)E,
                                       daT,case xT,daT,daT,xaaT of
                                            P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                            | _  (x. dio)E) of
                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                           P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T
        | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                               P    w)P
                           | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
    xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,xaT,daT,xaaT of P   )T
```

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            | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                              | _  dioE)
                           (case case (daT,case xaT,daT,daT,xaaT of
                                                 P x  (x. case xaT,daT,xT,xaaT of P   )T
                                                 | _  (x. dio)E,
                                       daT,case xT,daT,daT,xaaT of
                                                 P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                   P xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
          P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T
          | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                    P    w)P
                                   | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,daT,xaaT of
             P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
     xaaaT,case xT,daT,daT,xaaT of P xa  (xa. case xT,daT,xaT,xaaT of P   )T
             | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                              | _  dioE)
                           (case case (daT,case xaT,daT,xaaT,daT of
                                                 P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                 | _  (x. dio)E,
                                       daT,case xT,daT,xaaT,daT of
                                                 P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                                 | _  (x. dio)E) of
                                      (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                      | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                   P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
          P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
   xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T
          | _  (x. dio)E) of
                                                          (P , P )  (w.  w =  w)P
                                                          | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                          | (F , P )  (w.  w =  w)F
                                                          | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                          | (_, b)  dioE of
                                                    P    w)P
                                   | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
             P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
     xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,daT,xaaT,xaT of P   )T
             | _  (x. dio)E) of
(P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
| (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                                                      F    w)F
                              | _  dioE) of
                        F    w)F
   | _  dioE of
                                                       P xb
(w. xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                    daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T
```

```
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                  | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
     P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xT,daT,xaaT,daT of
     P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                           P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
       P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                        xaaaT,case xT,daT,xaaT,daT of
       P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                             F    w)F
                          | _  dioE)
                       (case case (daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                   daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                  | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                              P    w)P
                             | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P
                                                     | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                     | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                               F    w)F
                          | _  dioE)
                       (case case (daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                   daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                  | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F
                                  | (F , _)  dioE | (_, b)  dioE of
                             P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
      P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                      xaaaT,case xT,xaaT,daT,daT of
      P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                    | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
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                                                P    w)P
                                | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                      (P , P )  (w.  w =  w)P
                                                      | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                      | (F , P )  (w.  w =  w)F
                                                      | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                      | (_, b)  dioE of
                                                  F    w)F
                                | _  dioE) of
                        P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                           daT,case xT,daT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                     (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                     | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                     | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                     | (_, b)  dioE of
                                                 P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                 | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                   xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                             | _  dioE)
                                         (case case (daT,case xaT,xaaT,daT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,xaaT,daT,xaaaT of
    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                   (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                   | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                   | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                   | (_, b)  dioE of
                                               P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                        | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                                 | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                             | _  dioE)
                                         (case case (daT,case xaT,xaaT,xaaaT,daT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                    daT,case xT,xaaT,xaaaT,daT of
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    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P xb  (w. xaaaa.
   case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                     | _  (x. dio)E,
              xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                     | _  (x. dio)E) of
         (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
         | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
   P    w)P
                                              | F xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                              | _  dioE) of
                                        P    w)P
                  | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
       P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          P    w)P
                                                | F xb  (w.
    xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E,
                        xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                               | _  (x. dio)E) of
                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                 | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                 | (_, b)  dioE of
           F    w)F
                                                | _  dioE)
                                              (case case (daT,case xaT,xaaT,daT,xaaaT of
       P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                             | _  (x. dio)E,
                      xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                             | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
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            | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                              | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                              | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                             | _  dioE)
                                          (case case (daT,case xaT,xaaT,xaaaT,daT of
      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                            P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
        P    w)P
                                              | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E) of
             (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
             | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
             | (_, b)  dioE of
          F    w)F
                                             | _  dioE) of
                                       F    w)F
                | _  dioE of
            P    w)P
                                                        | F xb
   (w. xaa. case case (case case (daT,case xaT,daT,xaaT,daT of
                                          P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                     daT,case xT,daT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E) of
                                  (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                  | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                            P xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                                                 | (P , _)  dioE | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                               P    w)P
                            | F xb  (w. xaaa. case case (xaaaT,case xaT,daT,xaaT,daT of
        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xT,daT,xaaT,daT of P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
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                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                           F    w)F
                        | _  dioE)
                    (case case (daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                           P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
         P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                            F    w)F
                        | _  dioE)
                    (case case (daT,case xaT,xaaT,daT,daT of
                                        P x  (x. case xaT,xaaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaaT,daT,daT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E) of
                               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F
                               | (P , _)  dioE | (F , P )  (w.  w =  w)F
                               | (F , F )  (w.  w =  w)F | (F , _)  dioE | (_, b)  dioE of
                          P xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
                                                | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                | (_, b)  dioE of
                                           P    w)P
                          | F xb  (w. xaaa. case case (xaaaT,case xaT,xaaT,daT,daT of
         P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,daT of P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E) of
                                                 (P , P )  (w.  w =  w)P
                                                 | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                 | (F , P )  (w.  w =  w)F
                                                 | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                 | (_, b)  dioE of
                                            F    w)F
                        | _  dioE) of
                  P xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
                                                (P , P )  (w.  w =  w)P
                                                | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                | (F , P )  (w.  w =  w)F
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                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                           | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                              | _  dioE)
                                            (case case (daT,case xaT,xaaT,daT,xaaaT of
      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                           | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                           | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
          F    w)F
                                              | _  dioE)
                                            (case case (daT,case xaT,xaaT,xaaaT,daT of
      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
 daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                                                  (P , P )  (w.  w =  w)P
                                                  | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                  | (F , P )  (w.  w =  w)F
                                                  | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                  | (_, b)  dioE of
                                              P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                           | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                           | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                              | F xb  (w.
```

```
xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        F    w)F
                                          | _  dioE) of
                                    P    w)P
                | F xb  (w. xaaa. case (case case (daT,case xaT,daT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xT,daT,xaaT,xaaaT of P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                                | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,daT,xaaT,xaaaT of
                             P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                    xaaaaT,case xT,daT,xaaT,xaaaT of
                             P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
         F    w)F
                                               | _  dioE)
                                            (case case (daT,case xaT,xaaT,daT,xaaaT of
     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                         | _  (x. dio)E,
                  xaaaaT,case xT,xaaT,daT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                         | _  (x. dio)E) of
            (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
            | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
            | (_, b)  dioE of
        P    w)P
                                                | F xb  (w.
  xaaaa. case case (xaaaaT,case xaT,xaaT,daT,xaaaT of
                             P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                    xaaaaT,case xT,xaaT,daT,xaaaT of
                             P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E) of
               (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
               | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
               | (_, b)  dioE of
         F    w)F
                                               | _  dioE)
```

```
                                          (case case (daT,case xaT,xaaT,xaaaT,daT of
      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
      | _  (x. dio)E) of
                                                    (P , P )  (w.  w =  w)P
                                                    | (P , F )  (w.  w =  w)F | (P , _)  dioE
                                                    | (F , P )  (w.  w =  w)F
                                                    | (F , F )  (w.  w =  w)F | (F , _)  dioE
                                                    | (_, b)  dioE of
                                                P xb  (w.
 xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                            | _  (x. dio)E,
                   xaaaaT,case xT,xaaT,xaaaT,daT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                            | _  (x. dio)E) of
              (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
              | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
              | (_, b)  dioE of
         P    w)P
                                              | F xb  (w.
   xaaaa. case case (xaaaaT,case xaT,xaaT,xaaaT,daT of
                              P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                     xaaaaT,case xT,xaaT,xaaaT,daT of
                              P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E) of
                (P , P )  (w.  w =  w)P | (P , F )  (w.  w =  w)F | (P , _)  dioE
                | (F , P )  (w.  w =  w)F | (F , F )  (w.  w =  w)F | (F , _)  dioE
                | (_, b)  dioE of
           F    w)F
                                              | _  dioE) of
                                        F    w)F
                 | _  dioE of
            F    w)F
                                                      | _  dioE) of
                                                F    w)F
                              | _  dioE of
                         F    w)F
       | _  dioE of
  P   if w.  w = True then  else  | F   if w.  w = True then  else  | _  *) =
```