Modal Relational Type Theory in Isabelle/HOL

Christoph E. Benzmüller and Paul E. Oppenheimer and Edward N. Zalta

June 29, 2016

1 Introduction

The ambitious Principia Metaphysica [5] project 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 [6] — a metaphysical theory providing a systematic description of fundamental and complex abstract objects. This theory provides the starting point for Zalta's ongoing 'principia metaphysica' project[1].

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 [7]. 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 [7, 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 [4], 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 [1, 2]. 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 [2, 3].

The motivating research questions for the formalisation presented below include:

- Can functional type theory, despite the problems as pointed out by Zalta and Oppenheimer [7], 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 [2, 3].

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

	δ	::=	$a_1, a_2, \ldots$
	ν	::=	$x_1, x_2, \ldots$
$(n \geq 0)$	Σ^n	::=	$P^n_1, P^n_2, \ldots$
$(n \geq 0)$	Ω^n	::=	$F^n_1, F^n_2, \ldots$
	α	::=	$\nu \mid \Omega^n \; (n \geq 0)$
	κ	::=	$\delta \mid \nu \mid \iota\nu\varphi$
$(n \geq 1)$	Π^n	::=	$\Sigma^n \mid \Omega^n \mid [\lambda\nu_1 \ldots \nu_n \; \varphi^*]$
	Π^0	::=	$\Sigma^0 \mid \Omega^0 \mid [\lambda \; \varphi^*] \mid \varphi^*$
	φ^*	::=	$\Pi^n\kappa_1 \ldots \kappa_n \; (n \geq 1) \mid \Pi^0 \mid (\neg\varphi^*) \mid (\varphi^* \rightarrow \varphi^*) \mid \forall\alpha\varphi^* \mid (\Box\varphi^*) \mid (\mathcal{A}\varphi^*)$
	φ	::=	$\kappa_1\Pi^1 \mid \varphi^* \mid (\neg\varphi) \mid (\varphi \rightarrow \varphi) \mid \forall\alpha\varphi \mid (\Box\varphi) \mid (\mathcal{A}\varphi)$
	τ	::=	$\kappa \mid \Pi^n \; (n \geq 0)$

δ	individual constants
ν	individual variables
Σ^n	n-place relation constants $(n \geq 0)$
Ω^n	n-place relation variables $(n \geq 0)$
α	variables
κ	individual terms
Π^n	n-place relation terms $(n \geq 0)$
φ^*	propositional formulas
φ	formulas
τ	terms

Figure 1: Grammar of MRTT, cf. [5] 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.

In this contribution to the Archive of Formal Proofs we focus solely on the basic encoding of MRTT in functional type theory. The work presented here serves as the starting point for the formalization of further chapters of the theory of abstract objects and the principia metaphysica. We also leave the proper exploration and discussion of the above questions mainly to further work.

The idea we explore is to suitably extend and adapt 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). The grammar of MRTT is presented in Figure 1. Note that this grammar successfully excludes terms such as $(\lambda x.Rx \rightarrow xR)$, where Rx represents exemplification of property R by x and xR stands for the encoding of property R by x. It are such kind of lambda-abstractions which lead to paradoxical situations in the theory of abstract objects [7, 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 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. In fact, as we believe, this complexity makes pen and paper work with the proposed embedding pragmatically infeasible. In this sense, we agree with previous findings [7]. On the other hand, we illustrate the general feasibility, and we show, that within a modern interactive proof assistant like Isabelle/HOL the approach can eventually be handled to some modest degree. In fact, as we will also illustrate, the simplifier *simp* of Isabelle/HOL is well capable of effectively reducing the technically inflated terms we obtain from the extended embedding to their logical core content. In other words, the simplifier effectievely analyses and and rewrites the deeply annotated terms and propagates the annotation information as intended to top-level. It is exactly this effect which we want to emphasise and exploit here.[2]

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 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 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 [1, 2].

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** $\varphi^P \equiv P\ \varphi$

[2] We have also experimented with using definitions instead of abbreviations; the respective encodings can be requested from the authors.

abbreviation $mkF::io\Rightarrow io$ *opt* ($-^F$ [*109*] *110*) **where** $\varphi^F \equiv F\ \varphi$
abbreviation $mkT::'a\Rightarrow 'a$ *opt* ($-^T$ [*109*] *110*) **where** $\varphi^T \equiv T\ \varphi$
abbreviation $mkE::'a\Rightarrow 'a$ *opt* ($-^E$ [*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 further (dummy) constant symbols for the various other domains. We anyway assume that all domains are non-empty. Hence, introducing these constant symbols is obviously not harmful. [3]

consts $dw::i$
consts $de::e$ $dio::io$ $deio::e\Rightarrow io$ $da::'a$

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* $\Rightarrow io$ *opt* ($\mathcal{A}$ - [*64*] *65*) **where** $\mathcal{A}\varphi \equiv$ *case* φ *of*
$F(\psi) \Rightarrow F(\lambda w.\ \psi\ dw) \mid P(\psi) \Rightarrow P(\lambda w.\ \psi\ dw) \mid \text{-} \Rightarrow ERR(dio)$

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 $\kappa_1\Pi^1$ is noted below as $\{\!|\kappa_1,\Pi^1|\!\}$. Encoding yields formulas and never propositional formulas. It is mapped to expressions of form (*enc y Q*), where *enc* is uninterpreted constant symbol of appropriate type. Exemplification, noted below as $(\!|R^T,x^T,...|\!)$, it will mapped to predicate application in the meta-logic. Thus, lambda-conversion and comprehension is automatically ensured for exemplification, but not for encoding.

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

Unary exemplifying formulas $\Pi^1\kappa_1$ are noted below as $(\!|\Pi^1,\kappa_1|\!)$. Exemplification yields propositional formulas. It is mapped to predicate application.

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

For pragmatical reasons we support 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.

[3] The single polymorphic dummy $\mathbf{d}a::'a$, utilized e.g. in the definition of the universal quantifier of MRTT below, actually covers already all cases. However, to avoid unnecessary type inferences we actually prefer non-polymorphic dummy elements in all those cases where we can statically determine the required type.

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

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*$\Rightarrow$*io opt* ($\neg$ - [58] 59) **where** $\neg\,\varphi \equiv$ *case* φ *of*
$F(\psi) \Rightarrow F(\lambda w.\neg(\psi\ w)) \mid P(\psi) \Rightarrow P(\lambda w.\neg(\psi\ w)) \mid \text{-} \Rightarrow ERR(dio)$
abbreviation *implies*::*io opt*$\Rightarrow$*io opt*$\Rightarrow$*io opt* (**infixl** $\rightarrow$ 51) **where** $\varphi \rightarrow \psi \equiv$ *case* (φ,ψ) *of*
$(P(\alpha),P(\beta)) \Rightarrow P(\lambda w.\ \alpha\ w \longrightarrow \beta\ w) \mid (F(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longrightarrow \beta\ w) \mid$
$(P(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longrightarrow \beta\ w) \mid (F(\alpha),P(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \longrightarrow \beta\ w) \mid$
$\text{-} \Rightarrow ERR(dio)$

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 intuitive use in the remainder we additionally introduce binder notation $\forall\,x.\varphi$ as syntactic sugar for $\forall\,(\lambda x.\varphi)$.

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

The modal $\Box$-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 $\Box$-operator can be omitted. This is convenient and also improves the efficience of theorem provers, cf. [3]. In Section 7.4 we will actually demonstrate that the expected S5 properties are validated by our modeling of $\Box$. The $\Box$-operator can be applied to formulas and propositional formulas.

abbreviation *box*::*io opt*$\Rightarrow$*io opt* ($\Box$- [62] 63) **where** $\Box\varphi \equiv$ *case* φ *of*
$F(\psi) \Rightarrow F(\lambda w.\forall\,v.\ \psi\ v) \mid P(\psi) \Rightarrow P(\lambda w.\forall\,v.\ \psi\ v) \mid \text{-} \Rightarrow ERR(dio)$

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 $(\lambda x.Rx \rightarrow xR)$ (noted here as $(\boldsymbol{\lambda}x.\ (\!|R^T,x^T|\!) \rightarrow \{\!|x^T,R^T|\!\})$ are excluded, respectively identified as *ERR*-annotated terms in our framework. Their embedding 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 $\boldsymbol{\lambda}$.[4].

abbreviation *lam0*::*io opt*$\Rightarrow$*io opt* ($\boldsymbol{\lambda}^0$) **where** $\boldsymbol{\lambda}^0\varphi \equiv$ *case* φ *of*

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

$P(\psi) \Rightarrow P(\psi) \mid \text{-} \Rightarrow ERR\ dio$
abbreviation *lam*::$(e \Rightarrow io\ opt) \Rightarrow (e \Rightarrow io)\ opt$ $(\boldsymbol{\lambda})$ **where** $\boldsymbol{\lambda}\Phi \equiv case\ (\Phi\ de)\ of$
$P(\text{-}) \Rightarrow T(\lambda x.\ case\ (\Phi\ x)\ of\ P(\varphi) \Rightarrow \varphi) \mid \text{-} \Rightarrow ERR(\lambda x.\ dio)$
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** $\boldsymbol{\lambda}^2\Phi \equiv case\ (\Phi\ de\ de)\ of$
$P(\text{-}) \Rightarrow T(\lambda x\ y.\ case\ (\Phi\ x\ y)\ of\ P(\varphi) \Rightarrow \varphi) \mid \text{-} \Rightarrow ERR(\lambda x\ y.\ dio)$
abbreviation *lam3*::$(e \Rightarrow e \Rightarrow e \Rightarrow io\ opt) \Rightarrow (e \Rightarrow e \Rightarrow e \Rightarrow io)\ opt$ $(\boldsymbol{\lambda}^3)$ **where** $\boldsymbol{\lambda}^3\Phi \equiv case\ (\Phi\ de\ de\ de)\ of$
$P(\text{-}) \Rightarrow T(\lambda x\ y\ z.\ case\ (\Phi\ x\ y\ z)\ of\ P(\varphi) \Rightarrow \varphi) \mid \text{-} \Rightarrow ERR(\lambda x\ y\ z.\ dio)$

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** $\boldsymbol{\iota}\Phi \equiv case\ (\Phi\ de)\ of$
$F(\text{-}) \Rightarrow T(THE\ x.\ case\ (\Phi\ x)\ of\ F\ \psi \Rightarrow \psi\ dw) \mid P(\text{-}) \Rightarrow T(THE\ x.\ case\ (\Phi\ x)\ of\ P\ \psi \Rightarrow \psi\ dw)$
$\mid \text{-} \Rightarrow ERR(de)$
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** $\varphi \wedge \psi \equiv case\ (\varphi,\psi)\ of$
$(P(\alpha),P(\beta)) \Rightarrow P(\lambda w.\ \alpha\ w \wedge \beta\ w) \mid (F(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \wedge \beta\ w) \mid$
$(P(\alpha),F(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \wedge \beta\ w) \mid (F(\alpha),P(\beta)) \Rightarrow F(\lambda w.\ \alpha\ w \wedge \beta\ w) \mid$
$\text{-} \Rightarrow ERR(dio)$

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

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

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

abbreviation *exists*::$('a \Rightarrow io\ opt) \Rightarrow io\ opt$ $(\exists\,)$ **where** $\exists\,\Phi \equiv case\ (\Phi\ da)\ of$
$P(\text{-}) \Rightarrow P(\lambda w.\exists x.\ case\ (\Phi\ x)\ of\ P\ \psi \Rightarrow \psi\ w)$
$\mid F(\text{-}) \Rightarrow F(\lambda w.\ \exists x.\ case\ (\Phi\ x)\ of\ F\ \psi \Rightarrow \psi\ w) \mid \text{-} \Rightarrow ERR\ dio$
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. 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** $x = y \equiv$
$x =_E y \vee ((\!|A!, x|\!) \wedge (\!|A!, y|\!) \wedge \Box(\forall F.\ \{\!|x, F^T|\!\} \equiv \{\!|y, F^T|\!\}))$

5.1 Identitiy on Relations

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 $F0 =^0 G0 \equiv (\boldsymbol{\lambda} y\ .\ F0) =^1 (\boldsymbol{\lambda} y.\ G0)$

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 relevant.

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

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

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

7 Some Basic Tests

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

With the first 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* $F\ \psi \Rightarrow \psi\ w)^F \mid$ - $\Rightarrow dio^E$ *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* $F\ \psi \Rightarrow \psi\ w)^F \mid$ - $\Rightarrow dio^E$ *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* $F\ \psi \Rightarrow \psi\ w)^F \mid$ - $\Rightarrow dio^E$ *of* $F\ \psi \Rightarrow \psi\ w)^F \mid$ - $\Rightarrow dio^E$ *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* $\bot \mid$ - $\Rightarrow *) = \top$. 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 $\forall\, w\ x\ xa.$ *exe* $(x\ xa)\ w \longrightarrow$ *enc* $(x\ xa)\ w$ 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 provides evidence for the pragmatic infeasibility of the approach when using pen and paper only.

The next two statements are valid 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*

Of course, the following statements should be countersatisfiable. Nitpick confirms this

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

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

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

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** [*expect* = *genuine*] **oops** — Countermodel by Nitpick

lemma $[\varphi^P \to \Box\varphi^P] = \top$ **apply** *simp* **nitpick** [*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 $[\Box\varphi^P \to \varphi^P] = \top$ **apply** *simp* **done**
lemma $[\Box\varphi^F \to \varphi^F] = \top$ **apply** *simp* **done**
lemma $[\varphi^P \to \Box\Diamond\varphi^P] = \top$ **apply** *simp* **done**
lemma $[\varphi^F \to \Box\Diamond\varphi^F] = \top$ **apply** *simp* **done**
lemma $[\Box\varphi^P \to \Diamond\varphi^P] = \top$ **apply** *simp* **by** *auto*
lemma $[\Box\varphi^F \to \Diamond\varphi^F] = \top$ **apply** *simp* **by** *auto*
lemma $[\Box\varphi^P \to \Box\Box\varphi^P] = \top$ **apply** *simp* **done**
lemma $[\Box\varphi^F \to \Box\Box\varphi^F] = \top$ **apply** *simp* **done**
lemma $[\Diamond\varphi^P \to \Box\Diamond\varphi^P] = \top$ **apply** *simp* **done**
lemma $[\Diamond\varphi^F \to \Box\Diamond\varphi^F] = \top$ **apply** *simp* **done**
lemma $[\Box\Diamond\varphi^P \to \Diamond\varphi^P] = \top$ **apply** *simp* **done** — 5 Schema
lemma $[\Box\Diamond\varphi^F \to \Diamond\varphi^F] = \top$ **apply** *simp* **done** — 5 Schema
lemma $[\Diamond\Box\varphi^P \to \Diamond\varphi^P] = \top$ **apply** *simp* **by** *auto*
lemma $[\Diamond\Box\varphi^F \to \Diamond\varphi^F] = \top$ **apply** *simp* **by** *auto*
lemma $[\Box\Diamond\varphi^P \to \Box\varphi^P] = \top$ **apply** *simp* **nitpick oops** — Countermodel by Nitpick
lemma $[\Box\Diamond\varphi^F \to \Box\varphi^F] = \top$ **apply** *simp* **nitpick oops** — Countermodel by Nitpick
lemma $[\Diamond\Box\varphi^P \to \Box\varphi^P] = \top$ **apply** *simp* **done**
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. [7, chap.4]. When placing the mouse on 'simp' we see that this is evaluated to $(\lambda x.\ dio)^E$ 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 $(\lambda x.\ dio)^E$

Similarly, the following comprehension principle for abstract objects is an ineligible formula, cf. [7, 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 unstructured further test examples of our encoding.

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. [7, 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*

Properties of Equality

8.1 Axioms and Tests for Actuality

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

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

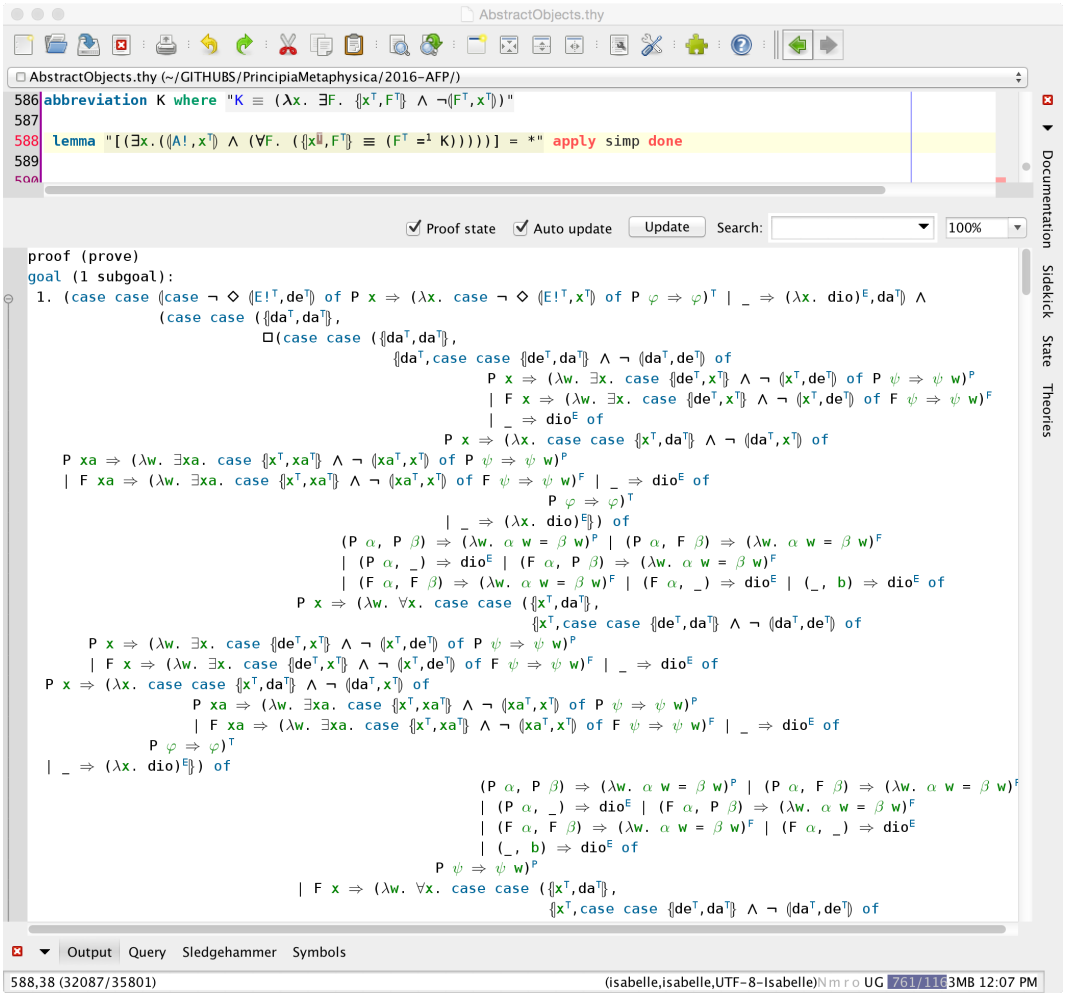

Figure 2: Display (of about 5%) of the unfolded expression $[(\exists\, x.(\langle\!|A!,x^T|\!\rangle \wedge (\forall\, F.\ (\{\!|x^T,F^T|\!\} \equiv (F^T =^1 K)))))] = *$ in Isabelle/HOL.

8.2 Axioms and Theory of Encoding

We study the Axioms and Theory of Encoding.

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 a fundamental theorem of encoding theory.

lemma $[(\forall\, x.\ \mathit{PossibleWorld}(x^T) \rightarrow \mathit{Maximal}(x^T))] = \top$ **apply** *simp* **nitpick sledgehammer oops**

Unfortunately, we are not in a position to prove this theorem. At the same we also fail to refute it. Eventually, this has to do with missing comprehension properties for encoding (remember that encoding was not mapped to predication in the meta-theory, as we did for exemplifications).

9 Summary

We have illustrated an idea to embed MRTT in MFTT and we have pushed the technical exhipition of that idea to some interesting intermediate state. The hope has been that theorem provers for MFTT can be succesfully reused for reasoning within MRTT and subsequently for reasoning in the theory of abstract objects. Within this paper we have illustrated that idea is not feasible with pen and paper and methods and even within the developed system infrastructure of Isabelle/HOL we 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). There are further issues to be investigated, for example, whether the presented fundamental theorem of encoding theory can still be automatically proved and whether there is hope that eventually also further fundamental theorems of the theory of abstract objects can be handled in the approach.

Independent of the outcome of this further research it should anyhow become clear from the presented work that building a system similar to Isabelle/HOL but with MRTT instead of MFTT would surely provide a more appropriate base environment for the formalization and automation of the theory of abstract objects and the principia metaphysica.

References

[1] C. Benzmüller and L. Paulson. Quantified multimodal logics in simple type theory. *Logica Universalis (Special Issue on Multimodal Logics)*, 7(1):7–20, 2013.

[2] C. Benzmüller and B. Woltzenlogel Paleo. Automating Gödel's ontological proof of God's existence with higher-order automated theorem provers. In T. Schaub, G. Friedrich, and B. O'Sullivan, editors, *ECAI 2014*, volume 263 of *Frontiers in Artificial Intelligence and Applications*, pages 93 – 98. IOS Press, 2014.

[3] C. Benzmüller and B. Woltzenlogel Paleo. The inconsistency in Gödels ontological argument: A success story for AI in metaphysics. In *IJCAI 2016*, 2016. Accepted for publication; to appear in 2016.

[4] A. Church. A formulation of the simple theory of types. *Journal of Symbolic Logic*, 5:56–68, 1940.

[5] E. N. Zalta. Principia metaphysica, a compilation of the theorems of the theory of abstract objects. Available at `https://mally.stanford.edu/publications.html`.

[6] E. N. Zalta. *Abstract Objects: An Introduction to Axiomatic Metaphysics*. Dordrecht: D. Reidel, 1983.

[7] E. N. Zalta and P. E. Oppenheimer. Relations versus functions at the foundations of logic: Type-theoretic considerations. *Journal of Logic and Computation*, (21):351374, 2011.

```
goal (1 subgoal):
 1. (case case case (case case (case case (daT,case daT,deT,daT,daT of
                                                 P x  (x. case daT,xT,daT,daT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case daT,deT,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,deT,daT,daT of
          P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
      xT,case daT,deT,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,deT,daT,daT of
             P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
        xT,case daT,deT,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,deT,daT of
                                                 P x  (x. case daT,daT,xT,daT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case daT,daT,deT,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,deT,daT of
          P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
      xT,case daT,daT,deT,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,deT,daT of
             P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
        xT,case daT,daT,deT,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,deT of
                                                 P x  (x. case daT,daT,daT,xT of P   )T
                                                 | _  (x. dio)E,
                                           daT,case daT,daT,daT,deT 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,deT of
          P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
      xT,case daT,daT,daT,deT 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,deT of
            P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
        xT,case daT,daT,daT,deT 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,deT,daT,xT of
           P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
      daT,case daT,deT,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,deT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,deT,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,deT,daT,xT of
                           P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                      xaT,case daT,deT,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,deT,xT of
           P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
      daT,case daT,daT,deT,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,deT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                  xaT,case daT,daT,deT,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,deT,xT of
                           P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                      xaT,case daT,daT,deT,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,deT of
           P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
     daT,case daT,daT,xT,deT 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,deT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                      | _  (x. dio)E,
                xaT,case daT,daT,xT,deT 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,deT of
                        P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                   xaT,case daT,daT,xT,deT 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,deT,daT,xT of
            P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
       daT,case daT,deT,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,deT,daT,xT of
                        P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                   xaT,case daT,deT,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,deT,daT,xT of
                          P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,deT,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,deT,xT of
             P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
       daT,case daT,daT,deT,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,deT,xT of
                          P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,deT,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,deT,xT of
                          P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,deT,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,deT of
              P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
        daT,case daT,daT,xT,deT 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,deT of
                          P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,xT,deT 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,deT of
                          P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                       xaT,case daT,daT,xT,deT 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,deT,xT,daT of
              P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
        daT,case daT,deT,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,deT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,deT,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,deT,xT,daT of
```

```
                          P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                     xaT,case daT,deT,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,deT,daT of
            P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
      daT,case daT,xT,deT,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,deT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                       | _  (x. dio)E,
                 xaT,case daT,xT,deT,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,deT,daT of
                          P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                     xaT,case daT,xT,deT,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,deT of
            P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
      daT,case daT,xT,daT,deT 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,deT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                       | _  (x. dio)E,
                 xaT,case daT,xT,daT,deT 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,deT of
                          P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,xT,daT,deT 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,deT,xT,xaT of
                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                   daT,case daT,deT,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,deT,xT,xaT of
                                P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                | _  (x. dio)E,
                           xaaT,case daT,deT,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,deT,xT,xaT of
                                  P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,deT,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,deT,xaT of
                   P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
              daT,case daT,xT,deT,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,deT,xaT of
                                  P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,xT,deT,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,deT,xaT of
                                   P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                   | _  (x. dio)E,
                              xaaT,case daT,xT,deT,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,deT of
                   P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
              daT,case daT,xT,xaT,deT 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,deT of
```

```
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,xaT,deT 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,deT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,xaT,deT 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,deT,xT,xaT of
                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                    daT,case daT,deT,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,deT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,deT,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,deT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,deT,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,deT,xaT of
                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
                    daT,case daT,xT,deT,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,deT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,deT,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,deT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,deT,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,deT of
                         P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                  daT,case daT,xT,xaT,deT 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,deT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,xaT,deT 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,deT of
                                        P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,xaT,deT 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,deT,xT,daT of
            P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
       daT,case daT,deT,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,deT,xT,daT of
                         P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                   xaT,case daT,deT,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,deT,xT,daT of
                           P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                       xaT,case daT,deT,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,deT,daT of
               P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
         daT,case daT,xT,deT,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,deT,daT of
                           P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                       xaT,case daT,xT,deT,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,deT,daT of
                           P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                       xaT,case daT,xT,deT,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,deT of
               P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
         daT,case daT,xT,daT,deT 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,deT of
                           P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                       xaT,case daT,xT,daT,deT 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,deT of
                           P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                       xaT,case daT,xT,daT,deT 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,deT,xT,xaT of
```

```
                  P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
            daT,case daT,deT,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,deT,xT,xaT of
                                 P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                 | _  (x. dio)E,
                           xaaT,case daT,deT,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,deT,xT,xaT of
                                   P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                   | _  (x. dio)E,
                             xaaT,case daT,deT,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,deT,xaT of
                  P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
            daT,case daT,xT,deT,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,deT,xaT of
                                 P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                 | _  (x. dio)E,
                           xaaT,case daT,xT,deT,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,deT,xaT of
                                   P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                   | _  (x. dio)E,
                             xaaT,case daT,xT,deT,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,deT of
                  P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
            daT,case daT,xT,xaT,deT 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,deT of
                                    P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xT,xaT,deT 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,deT of
                                    P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xT,xaT,deT 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,deT,xT,xaT of
                            P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                      daT,case daT,deT,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,deT,xT,xaT of
                                    P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,deT,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,deT,xT,xaT of
                                      P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                      | _  (x. dio)E,
                                  xaaT,case daT,deT,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,deT,xaT of
                            P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
                      daT,case daT,xT,deT,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,deT,xaT of
                                    P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
```

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

```
      xT,case daT,deT,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,deT,daT,daT of
             P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
        xT,case daT,deT,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,deT,daT of
                                                P x  (x. case daT,daT,xT,daT of P   )T
                                                | _  (x. dio)E,
                                           daT,case daT,daT,deT,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,deT,daT of
          P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
     xT,case daT,daT,deT,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,deT,daT of
             P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
        xT,case daT,daT,deT,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,deT of
                                                P x  (x. case daT,daT,daT,xT of P   )T
                                                | _  (x. dio)E,
                                           daT,case daT,daT,daT,deT 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,deT of
          P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
     xT,case daT,daT,daT,deT 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,deT of
             P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
        xT,case daT,daT,daT,deT 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,deT,daT,xT of
           P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
      daT,case daT,deT,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,deT,daT,xT of P xa  (xa. case daT,xaT,daT,xT of P   )T
                     | _  (x. dio)E,
                  xaT,case daT,deT,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,deT,daT,xT of
                           P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,deT,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,deT,xT of
           P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
      daT,case daT,daT,deT,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,deT,xT of P xa  (xa. case daT,daT,xaT,xT of P   )T
                     | _  (x. dio)E,
                  xaT,case daT,daT,deT,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,deT,xT of
                           P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,deT,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,deT of
           P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
      daT,case daT,daT,xT,deT 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,deT of P xa  (xa. case daT,daT,xT,xaT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,daT,xT,deT 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,deT of
                           P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,xT,deT 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,deT,daT,xT of
              P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
        daT,case daT,deT,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,deT,daT,xT of
                           P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,deT,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,deT,daT,xT of
                             P xa  (xa. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                       xaT,case daT,deT,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,deT,xT of
              P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
        daT,case daT,daT,deT,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,deT,xT of
                           P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,deT,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,deT,xT of
                             P xa  (xa. case daT,daT,xaT,xT of P   )T | _  (x. dio)E,
                       xaT,case daT,daT,deT,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,deT of
             P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
       daT,case daT,daT,xT,deT 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,deT of
                          P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,xT,deT 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,deT of
                          P xa  (xa. case daT,daT,xT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,xT,deT 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,deT,xT,daT of
             P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
       daT,case daT,deT,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,deT,xT,daT of P xa  (xa. case daT,xaT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case daT,deT,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,deT,xT,daT of
                          P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                     xaT,case daT,deT,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,deT,daT of
             P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
       daT,case daT,xT,deT,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,deT,daT of P xa  (xa. case daT,xT,xaT,daT of P   )T
                      | _  (x. dio)E,
                 xaT,case daT,xT,deT,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,deT,daT of
                        P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                    xaT,case daT,xT,deT,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,deT of
           P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
      daT,case daT,xT,daT,deT 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,deT of P xa  (xa. case daT,xT,daT,xaT of P   )T
                      | _  (x. dio)E,
                 xaT,case daT,xT,daT,deT 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,deT of
                        P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                    xaT,case daT,xT,daT,deT 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,deT,xT,xaT of
                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                   daT,case daT,deT,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,deT,xT,xaT of
                                    P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,deT,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,deT,xT,xaT of
                                  P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,deT,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,deT,xaT of
                    P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
               daT,case daT,xT,deT,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,deT,xaT of
                                  P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xT,deT,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,deT,xaT of
                                    P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                    | _  (x. dio)E,
                             xaaT,case daT,xT,deT,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,deT of
                    P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
               daT,case daT,xT,xaT,deT 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,deT of
                                  P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xT,xaT,deT 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,deT of
                                    P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                             xaaT,case daT,xT,xaT,deT 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,deT,xT,xaT of
                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                    daT,case daT,deT,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,deT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,deT,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,deT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                      xaaT,case daT,deT,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,deT,xaT of
                          P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
                    daT,case daT,xT,deT,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,deT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xT,deT,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,deT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                      xaaT,case daT,xT,deT,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,deT of
                         P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                   daT,case daT,xT,xaT,deT 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,deT of
                                       P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xT,xaT,deT 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,deT of
                                       P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xT,xaT,deT 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,deT,xT,daT of
               P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
          daT,case daT,deT,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,deT,xT,daT of
                           P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                      xaT,case daT,deT,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,deT,xT,daT of
                           P xa  (xa. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                      xaT,case daT,deT,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,deT,daT of
               P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
          daT,case daT,xT,deT,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,deT,daT of
                          P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                     xaT,case daT,xT,deT,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,deT,daT of
                            P xa  (xa. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                       xaT,case daT,xT,deT,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,deT of
              P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
        daT,case daT,xT,daT,deT 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,deT of
                          P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,xT,daT,deT 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,deT of
                            P xa  (xa. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                       xaT,case daT,xT,daT,deT 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,deT,xT,xaT of
                          P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                     daT,case daT,deT,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,deT,xT,xaT of
                                         P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case daT,deT,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,deT,xT,xaT of
                                  P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,deT,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,deT,xaT of
                   P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
              daT,case daT,xT,deT,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,deT,xaT of
                                  P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xT,deT,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,deT,xaT of
                                  P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xT,deT,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,deT of
                   P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
              daT,case daT,xT,xaT,deT 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,deT of
                                  P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xT,xaT,deT 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,deT of
                                  P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
```

```
                                        | _  (x. dio)E,
                                    xaaT,case daT,xT,xaT,deT 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,deT,xT,xaT of
                            P xb  (xaa. case daT,xaaT,xT,xaT of P   )T | _  (x. dio)E,
                        daT,case daT,deT,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,deT,xT,xaT of
                                        P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,deT,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,deT,xT,xaT of
                                            P xb  (xaa. case daT,xaaT,xT,xaT of P   )T
                                            | _  (x. dio)E,
                                        xaaT,case daT,deT,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,deT,xaT of
                            P xb  (xaa. case daT,xT,xaaT,xaT of P   )T | _  (x. dio)E,
                        daT,case daT,xT,deT,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,deT,xaT of
                                        P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xT,deT,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,deT,xaT of
                                            P xb  (xaa. case daT,xT,xaaT,xaT of P   )T
                                            | _  (x. dio)E,
                                        xaaT,case daT,xT,deT,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,deT of
                            P xb  (xaa. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                     daT,case daT,xT,xaT,deT 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,deT of
                                         P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case daT,xT,xaT,deT 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,deT of
                                           P xb  (xaa. case daT,xT,xaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      xaaT,case daT,xT,xaT,deT 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) of
               P x  (w. x. case (case case (case case (daT,case daT,deT,daT,daT of
             P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
      daT,case xT,deT,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,deT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                          | _  (x. dio)E,
                    xaT,case xT,deT,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,deT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                          | _  (x. dio)E,
                    xaT,case xT,deT,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,deT,daT of
            P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
      daT,case xT,daT,deT,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,deT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                       | _  (x. dio)E,
                 xaT,case xT,daT,deT,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,deT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                          | _  (x. dio)E,
                    xaT,case xT,daT,deT,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,deT of
            P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
      daT,case xT,daT,daT,deT 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,deT of P x  (x. case daT,daT,daT,xT of P   )T
                       | _  (x. dio)E,
                 xaT,case xT,daT,daT,deT 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,deT of P x  (x. case daT,daT,daT,xT of P   )T
                          | _  (x. dio)E,
                    xaT,case xT,daT,daT,deT 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,deT,daT,xaT of
                        P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                  daT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
```

```
                                  | _  (x. dio)E,
                              xaaT,case xT,deT,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,deT,daT,xaT of
                                     P x  (x. case daT,xT,daT,xaT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                         | _  (x. dio)E,
                  daT,case xT,daT,deT,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,deT,xaT of
                                     P x  (x. case daT,daT,xT,xaT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT,xaT of
                                     P x  (x. case daT,daT,xT,xaT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT of P x  (x. case daT,daT,xaT,xT of P   )T
                         | _  (x. dio)E,
                  daT,case xT,daT,xaT,deT 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,deT of
                                     P x  (x. case daT,daT,xaT,xT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,daT,xaT,deT 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,deT of
                                    P x  (x. case daT,daT,xaT,xT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,xaT,deT 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,deT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                          | _  (x. dio)E,
                    daT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                          | _  (x. dio)E,
                    daT,case xT,daT,deT,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,deT,xaT of
                                    P x  (x. case daT,daT,xT,xaT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,deT,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,deT,xaT of
                                  P x  (x. case daT,daT,xT,xaT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xT,daT,deT,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,deT of P x  (x. case daT,daT,xaT,xT of P   )T
                    | _  (x. dio)E,
                daT,case xT,daT,xaT,deT 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,deT of
                                  P x  (x. case daT,daT,xaT,xT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xT,daT,xaT,deT 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,deT of
                                  P x  (x. case daT,daT,xaT,xT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xT,daT,xaT,deT 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,deT,xaT,daT of
                       P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                  daT,case xT,deT,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,deT,xaT,daT of
                                  P x  (x. case daT,xT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xT,deT,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,deT,xaT,daT of
                                  P x  (x. case daT,xT,xaT,daT of P   )T
                                  | _  (x. dio)E,
```

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

```
                    daT,case daT,daT,xaT,deT 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,deT of
                                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,xaT,deT 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,deT of
                                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,daT,xaT,deT 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,deT,xaT,daT of
                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                    daT,case daT,deT,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,deT,xaT,daT of
                                       P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,deT,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,deT,xaT,daT of
                                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,deT,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,deT,daT of
                          P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                    daT,case daT,xaT,deT,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,deT,daT of
                                  P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case daT,xaT,deT,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,deT,daT of
                                  P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case daT,xaT,deT,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,deT of
                      P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                daT,case daT,xaT,daT,deT 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,deT of
                                  P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case daT,xaT,daT,deT 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,deT of
                                  P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                | _  (x. dio)E,
                            daT,case daT,deT,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,deT,xaT,xaaT of
P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                             xaaaT,case daT,deT,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,deT,xaT,xaaT of
  P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                               xaaaT,case daT,deT,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,deT,xaaT of
                                         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                         | _  (x. dio)E,
                                   daT,case daT,xaT,deT,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,deT,xaaT of
 P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                             xaaaT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                               xaaaT,case daT,xaT,deT,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,deT of
                                         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                         | _  (x. dio)E,
                                   daT,case daT,xaT,xaaT,deT 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,deT of
 P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                             xaaaT,case daT,xaT,xaaT,deT 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,deT of
    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,deT,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,deT,xaT,xaaT of
     P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaaT of
                                       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case daT,xaT,deT,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,deT,xaaT of
    P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,deT,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,deT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,deT,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,deT of
                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case daT,xaT,xaaT,deT 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,deT of
    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,xaaT,deT 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,deT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,daT of
                            P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                       daT,case daT,deT,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,deT,xaT,daT of
                                   P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                   | _  (x. dio)E,
```

```
                          xaaT,case daT,deT,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,deT,xaT,daT of
                                  P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,deT,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,deT,daT of
                     P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
               daT,case daT,xaT,deT,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,deT,daT of
                                  P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,xaT,deT,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,deT,daT of
                                   P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                   | _  (x. dio)E,
                              xaaT,case daT,xaT,deT,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,deT of
                     P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
               daT,case daT,xaT,daT,deT 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,deT of
                                  P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,xaT,daT,deT 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,deT of
                                    P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                  P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                  | _  (x. dio)E,
                              daT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaaT of
                                   P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                   | _  (x. dio)E,
                               daT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,deT,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,deT of
                                    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                    | _  (x. dio)E,
                                daT,case daT,xaT,xaaT,deT 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,deT of
 P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,xaaT,deT 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,deT of
  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                  daT,case daT,deT,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,deT,xaT,xaaT of
  P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaT,xaaT of
      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,deT,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,deT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,deT,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,deT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,deT,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,deT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,deT,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,deT of
                                            P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                            | _  (x. dio)E,
                                       daT,case daT,xaT,xaaT,deT 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,deT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,xaT,xaaT,deT 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,deT of
```

```
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,deT 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,deT,daT,daT of
             P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
       daT,case xT,deT,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,deT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                          | _  (x. dio)E,
                    xaT,case xT,deT,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,deT,daT,daT of
                          P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
                    xaT,case xT,deT,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,deT,daT of
             P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
       daT,case xT,daT,deT,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,deT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                          | _  (x. dio)E,
                    xaT,case xT,daT,deT,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,deT,daT of
                          P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
                    xaT,case xT,daT,deT,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,deT of
             P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
        daT,case xT,daT,daT,deT 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,deT of P x  (x. case daT,daT,daT,xT of P   )T
                          | _  (x. dio)E,
                     xaT,case xT,daT,daT,deT 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,deT of
                           P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
                      xaT,case xT,daT,daT,deT 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,deT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                         | _  (x. dio)E,
                    daT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                         | _  (x. dio)E,
                    daT,case xT,daT,deT,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,deT,xaT of
                                    P x  (x. case daT,daT,xT,xaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT,xaT of
                                    P x  (x. case daT,daT,xT,xaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT of P x  (x. case daT,daT,xaT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,daT,xaT,deT 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,deT of
                                    P x  (x. case daT,daT,xaT,xT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,xaT,deT 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,deT of
                                    P x  (x. case daT,daT,xaT,xT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,xaT,deT 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,deT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                            | _  (x. dio)E,
                      daT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
```

```
                                    | _  (x. dio)E,
                               xaaT,case xT,deT,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,deT,daT,xaT of
                                     P x  (x. case daT,xT,daT,xaT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                    | _  (x. dio)E,
               daT,case xT,daT,deT,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,deT,xaT of
                                     P x  (x. case daT,daT,xT,xaT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT,xaT of
                                     P x  (x. case daT,daT,xT,xaT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT of P x  (x. case daT,daT,xaT,xT of P   )T
                    | _  (x. dio)E,
               daT,case xT,daT,xaT,deT 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,deT of
                                     P x  (x. case daT,daT,xaT,xT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,daT,xaT,deT 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,deT of
                                    P x  (x. case daT,daT,xaT,xT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,xaT,deT 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,deT,xaT,daT of
                           P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,deT,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,deT,xaT,daT of
                                 P x  (x. case daT,xT,xaT,daT of P   )T
                                 | _  (x. dio)E,
                              xaaT,case xT,deT,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,deT,xaT,daT of
                                    P x  (x. case daT,xT,xaT,daT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,deT,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,deT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                          | _  (x. dio)E,
                    daT,case xT,xaT,deT,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,deT,daT of
                                    P x  (x. case daT,xaT,xT,daT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,xaT,deT,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,deT,daT of
                                    P x  (x. case daT,xaT,xT,daT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,xaT,deT,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,deT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                  daT,case xT,xaT,daT,deT 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,deT of
                                    P x  (x. case daT,xaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,xaT,daT,deT 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,deT of
                                    P x  (x. case daT,xaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,xaT,daT,deT 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,deT,xaT,xaaT of
                                  P x  (x. case daT,xT,xaT,xaaT of P   )T
                                  | _  (x. dio)E,
                              daT,case xT,deT,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,deT,xaT,xaaT of
 P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaT,xaaT of
   P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,deT,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,deT,xaaT of
                                        P x  (x. case daT,xaT,xT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaT,deT,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,deT,xaaT of
P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaT,deT,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,deT,xaaT of
  P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaT,deT,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,deT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaT,xaaT,deT 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,deT of
P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaT,xaaT,deT 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,deT of
  P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                          P x  (x. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,deT,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,deT,xaT,xaaT of
     P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,deT,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)P
                        | _  dioE)
                     (case case (daT,case daT,xaT,deT,xaaT of
                                           P x  (x. case daT,xaT,xT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,xaT,deT,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,deT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,xaT,deT,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,deT,xaaT of
         P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT of
                                       P x  (x. case daT,xaT,xaaT,xT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,xaT,xaaT,deT 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,deT of
     P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaT,xaaT,deT 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,deT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,daT of
                               P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                          daT,case xT,deT,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,deT,xaT,daT of
                                       P x  (x. case daT,xT,xaT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,deT,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,deT,xaT,daT of
                                          P x  (x. case daT,xT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case xT,deT,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,deT,daT of
                     P x  (x. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
               daT,case xT,xaT,deT,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,deT,daT of
                                    P x  (x. case daT,xaT,xT,daT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,xaT,deT,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,deT,daT of
                                      P x  (x. case daT,xaT,xT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xT,xaT,deT,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,deT of
                     P x  (x. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
               daT,case xT,xaT,daT,deT 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,deT of
                                    P x  (x. case daT,xaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,xaT,daT,deT 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,deT of
                                      P x  (x. case daT,xaT,daT,xT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xT,xaT,daT,deT 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,deT,xaT,xaaT of
                                    P x  (x. case daT,xT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,deT,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,deT,xaT,xaaT of
    P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT of
                                    P x  (x. case daT,xaT,xT,xaaT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,xaT,deT,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,deT,xaaT of
    P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaT,deT,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,deT,xaaT of
      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaT,xaaT,deT 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,deT of
     P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaT,xaaT,deT 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,deT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                         P x  (x. case daT,xT,xaT,xaaT of P   )T
                                         | _  (x. dio)E,
                                    daT,case xT,deT,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,deT,xaT,xaaT of
     P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,deT,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,deT,xaaT of
                                    P x  (x. case daT,xaT,xT,xaaT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,xaT,deT,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,deT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT,xaaT of
         P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,deT,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,deT of
                                    P x  (x. case daT,xaT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,xaT,xaaT,deT 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,deT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT of
         P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,xaaT,deT 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,deT,daT,daT of
             P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
       daT,case daT,deT,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,deT,daT,daT of
                          P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                    xaT,case daT,deT,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,deT,daT,daT of
                          P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                     xaT,case daT,deT,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,deT,daT of
             P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
       daT,case daT,daT,deT,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,deT,daT of
                          P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
                    xaT,case daT,daT,deT,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,deT,daT of
                          P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,deT,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,deT of
             P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
       daT,case daT,daT,daT,deT 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,deT of
                          P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
                     xaT,case daT,daT,daT,deT 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,deT of
                           P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
                      xaT,case daT,daT,daT,deT 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,deT,daT,xaT of
                         P xb  (xaa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                    daT,case daT,deT,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,deT,daT,xaT of
                                       P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,deT,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,deT,daT,xaT of
                                         P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case daT,deT,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,deT,xaT of
                         P xb  (xaa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                    daT,case daT,daT,deT,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,deT,xaT of
                                       P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,daT,deT,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,deT,xaT of
                                    P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,daT,deT,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,deT of
                        P xb  (xaa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                   daT,case daT,daT,xaT,deT 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,deT of
                                    P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,daT,xaT,deT 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,deT of
                                    P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,daT,xaT,deT 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,deT,daT,xaT of
                           P xb  (xaa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                      daT,case daT,deT,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,deT,daT,xaT of
                                    P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,deT,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,deT,daT,xaT of
                                      P xb  (xaa. case xT,xaaT,daT,xaT of P   )T
                                      | _  (x. dio)E,
```

```
                            xaaT,case daT,deT,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,deT,xaT of
                      P xb  (xaa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
               daT,case daT,daT,deT,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,deT,xaT of
                                   P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                   | _  (x. dio)E,
                               xaaT,case daT,daT,deT,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,deT,xaT of
                                   P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                   | _  (x. dio)E,
                               xaaT,case daT,daT,deT,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,deT of
                      P xb  (xaa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
               daT,case daT,daT,xaT,deT 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,deT of
                                   P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                   | _  (x. dio)E,
                               xaaT,case daT,daT,xaT,deT 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,deT of
                                   P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                   | _  (x. dio)E,
                               xaaT,case daT,daT,xaT,deT 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,deT,xaT,daT of
                        P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                  daT,case daT,deT,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,deT,xaT,daT of
                                    P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,deT,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,deT,xaT,daT of
                                     P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case daT,deT,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,deT,daT of
                         P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                   daT,case daT,xaT,deT,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,deT,daT of
                                     P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case daT,xaT,deT,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,deT,daT of
                                      P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xaT,deT,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,deT of
```

```
                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                   daT,case daT,xaT,daT,deT 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,deT of
                                      P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case daT,xaT,daT,deT 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,deT of
                                       P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                    P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                               daT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,deT,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,deT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,deT,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,deT,xaaT of
    P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,deT,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,deT of
                                    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                    | _  (x. dio)E,
                               daT,case daT,xaT,xaaT,deT 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,deT of
  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,xaaT,deT 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,deT of
    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case daT,deT,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,deT,xaT,xaaT of
     P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaT,xaaT of
       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,deT,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,deT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,deT,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,deT,xaaT of
       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,xaT,deT,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,deT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,deT,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,deT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,xaaT,deT 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,deT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,xaT,xaaT,deT 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,deT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,daT of
                               P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                          daT,case daT,deT,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,deT,xaT,daT of
                                       P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,deT,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,deT,xaT,daT of
                                         P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                         | _  (x. dio)E,
                                    xaaT,case daT,deT,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,deT,daT of
                               P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                          daT,case daT,xaT,deT,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,deT,daT of
                                    P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,deT,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,deT,daT of
                                    P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,deT,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,deT of
                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                    daT,case daT,xaT,daT,deT 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,deT of
                                    P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,daT,deT 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,deT of
                                    P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                | _  (x. dio)E,
                            daT,case daT,deT,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,deT,xaT,xaaT of
```

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

```
                daT,case daT,daT,deT,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,deT,xaT of
                                    P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,daT,deT,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,deT,xaT of
                                    P xb  (xaa. case xT,daT,xaaT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,daT,deT,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,deT of
                       P xb  (xaa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                daT,case daT,daT,xaT,deT 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,deT of
                                    P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,daT,xaT,deT 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,deT of
                                    P xb  (xaa. case xT,daT,xaT,xaaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case daT,daT,xaT,deT 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,deT,xaT,daT of
                      P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                daT,case daT,deT,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,deT,xaT,daT of
                                P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                | _  (x. dio)E,
                           xaaT,case daT,deT,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,deT,xaT,daT of
                                  P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,deT,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,deT,daT of
                   P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
              daT,case daT,xaT,deT,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,deT,daT of
                                P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                | _  (x. dio)E,
                           xaaT,case daT,xaT,deT,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,deT,daT of
                                  P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case daT,xaT,deT,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,deT of
                   P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
              daT,case daT,xaT,daT,deT 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,deT of
                                P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                | _  (x. dio)E,
```

```
                                xaaT,case daT,xaT,daT,deT 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,deT of
                                       P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                     P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                     | _  (x. dio)E,
                                daT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case daT,deT,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,deT,xaaT of
                                       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case daT,xaT,deT,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,deT,xaaT of
 P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,deT,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,deT,xaaT of
    P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,xaT,deT,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,deT of
                                        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,xaaT,deT 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,deT of
  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,xaaT,deT 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,deT of
    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                         P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                         | _  (x. dio)E,
                                    daT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,deT,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,deT,xaaT of
                                  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case daT,xaT,deT,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,deT,xaaT of
P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,deT,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,deT of
                                  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case daT,xaT,xaaT,deT 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,deT of
P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,xaT,xaaT,deT 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,deT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,daT of
                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                     daT,case daT,deT,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,deT,xaT,daT of
                                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case daT,deT,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,deT,xaT,daT of
                                           P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case daT,deT,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,deT,daT of
                             P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                   daT,case daT,xaT,deT,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,deT,daT of
                                           P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                           | _  (x. dio)E,
                                     xaaT,case daT,xaT,deT,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,deT,daT of
                                    P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,deT,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,deT of
                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                  daT,case daT,xaT,daT,deT 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,deT of
                                    P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,daT,deT 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,deT of
                                    P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                  P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                  | _  (x. dio)E,
                              daT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,deT,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,deT,xaT,xaaT of
```

```
P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,deT,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,deT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case daT,xaT,deT,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,deT,xaaT of
P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,deT,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,deT of
                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E,
                                     daT,case daT,xaT,xaaT,deT 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,deT of
P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,xaaT,deT 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,deT of
  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                          P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case daT,deT,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,deT,xaT,xaaT of
     P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                      xaaaT,case daT,deT,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,deT,xaT,xaaT of
       P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                        xaaaT,case daT,deT,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,deT,xaaT of
                                           P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                     daT,case daT,xaT,deT,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,deT,xaaT of
      P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                       xaaaT,case daT,xaT,deT,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,deT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,deT,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,deT of
                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E,
                                   daT,case daT,xaT,xaaT,deT 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,deT of
     P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,xaaT,deT 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,deT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,deT 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,deT,daT,daT of
            P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
      daT,case xT,deT,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,deT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,deT,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,deT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                          | _  (x. dio)E,
                     xaT,case xT,deT,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,deT,daT of
           P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
      daT,case xT,daT,deT,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,deT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,deT,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,deT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                         | _  (x. dio)E,
                    xaT,case xT,daT,deT,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,deT of
           P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
      daT,case xT,daT,daT,deT 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,deT of P x  (x. case daT,daT,daT,xT of P   )T
                       | _  (x. dio)E,
                  xaT,case xT,daT,daT,deT 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,deT of P x  (x. case daT,daT,daT,xT of P   )T
                         | _  (x. dio)E,
                    xaT,case xT,daT,daT,deT 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,deT,daT,xaT of
                     P x  (x. case daT,xT,daT,xaT of P   )T | _  (x. dio)E,
                daT,case xT,deT,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,deT,daT,xaT of
                                P x  (x. case daT,xT,daT,xaT of P   )T
                                | _  (x. dio)E,
                           xaaT,case xT,deT,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,deT,daT,xaT of
                                  P x  (x. case daT,xT,daT,xaT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                   | _  (x. dio)E,
              daT,case xT,daT,deT,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,deT,xaT of
                                P x  (x. case daT,daT,xT,xaT of P   )T
                                | _  (x. dio)E,
                           xaaT,case xT,daT,deT,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,deT,xaT of
                                  P x  (x. case daT,daT,xT,xaT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case xT,daT,deT,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,deT of P x  (x. case daT,daT,xaT,xT of P   )T
                   | _  (x. dio)E,
              daT,case xT,daT,xaT,deT 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,deT of
                                P x  (x. case daT,daT,xaT,xT of P   )T
                                | _  (x. dio)E,
                           xaaT,case xT,daT,xaT,deT 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,deT of
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,daT,xaT,deT 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,deT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                         | _  (x. dio)E,
                    daT,case xT,deT,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,deT,daT,xaT of
                                        P x  (x. case daT,xT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,deT,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,deT,daT,xaT of
                                        P x  (x. case daT,xT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                         | _  (x. dio)E,
                    daT,case xT,daT,deT,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,deT,xaT of
                                        P x  (x. case daT,daT,xT,xaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,daT,deT,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,deT,xaT of
                                    P x  (x. case daT,daT,xT,xaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,deT,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,deT of P x  (x. case daT,daT,xaT,xT of P   )T
                       | _  (x. dio)E,
                  daT,case xT,daT,xaT,deT 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,deT of
                                    P x  (x. case daT,daT,xaT,xT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,xaT,deT 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,deT of
                                    P x  (x. case daT,daT,xaT,xT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,daT,xaT,deT 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,deT,xaT,daT of
                          P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,deT,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,deT,xaT,daT of
                                    P x  (x. case daT,xT,xaT,daT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xT,deT,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,deT,xaT,daT of
                                  P x  (x. case daT,xT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,deT,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,deT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                     | _  (x. dio)E,
               daT,case xT,xaT,deT,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,deT,daT of
                                  P x  (x. case daT,xaT,xT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,xaT,deT,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,deT,daT of
                                     P x  (x. case daT,xaT,xT,daT of P   )T
                                     | _  (x. dio)E,
                              xaaT,case xT,xaT,deT,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,deT of P x  (x. case daT,xaT,daT,xT of P   )T
                     | _  (x. dio)E,
               daT,case xT,xaT,daT,deT 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,deT of
                                  P x  (x. case daT,xaT,daT,xT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,xaT,daT,deT 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,deT of
                                     P x  (x. case daT,xaT,daT,xT of P   )T
                                     | _  (x. dio)E,
                              xaaT,case xT,xaT,daT,deT 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,deT,xaT,xaaT of
                                      P x  (x. case daT,xT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xT,deT,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,deT,xaT,xaaT of
 P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaT,xaaT of
   P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaaT of
                                         P x  (x. case daT,xaT,xT,xaaT of P   )T
                                         | _  (x. dio)E,
                                      daT,case xT,xaT,deT,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,deT,xaaT of
  P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaT,deT,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,deT,xaaT of
    P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,deT,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,deT of
                                    P x  (x. case daT,xaT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,xaT,xaaT,deT 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,deT of
  P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaT,xaaT,deT 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,deT of
    P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                  daT,case xT,deT,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,deT,xaT,xaaT of
   P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaT,xaaT of
     P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,xaaT of
                                    P x  (x. case daT,xaT,xT,xaaT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaT,deT,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,deT,xaaT of
P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                           xaaaT,case xT,xaT,deT,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,deT,xaaT of
  P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaT,deT,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,deT of
                                    P x  (x. case daT,xaT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaT,xaaT,deT 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,deT of
P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                           xaaaT,case xT,xaT,xaaT,deT 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,deT of
  P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,daT of
                            P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                      daT,case xT,deT,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,deT,xaT,daT of
                                        P x  (x. case daT,xT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,deT,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,deT,xaT,daT of
                                          P x  (x. case daT,xT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case xT,deT,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,deT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                              | _  (x. dio)E,
                       daT,case xT,xaT,deT,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,deT,daT of
                                          P x  (x. case daT,xaT,xT,daT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case xT,xaT,deT,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,deT,daT of
                                           P x  (x. case daT,xaT,xT,daT of P   )T
                                           | _  (x. dio)E,
                                      xaaT,case xT,xaT,deT,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,deT of P x  (x. case daT,xaT,daT,xT of P   )T
                        | _  (x. dio)E,
                   daT,case xT,xaT,daT,deT 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,deT of
                                    P x  (x. case daT,xaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,xaT,daT,deT 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,deT of
                                     P x  (x. case daT,xaT,daT,xT of P   )T
                                     | _  (x. dio)E,
                                xaaT,case xT,xaT,daT,deT 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,deT,xaT,xaaT of
                                   P x  (x. case daT,xT,xaT,xaaT of P   )T
                                   | _  (x. dio)E,
                              daT,case xT,deT,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,deT,xaT,xaaT of
 P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaT,xaaT of
   P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT of
                                      P x  (x. case daT,xaT,xT,xaaT of P   )T
                                      | _  (x. dio)E,
```

```
                                daT,case xT,xaT,deT,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,deT,xaaT of
  P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,deT,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,deT,xaaT of
    P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,xaT,deT,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,deT of
                                      P x  (x. case daT,xaT,xaaT,xT of P   )T
                                      | _  (x. dio)E,
                                daT,case xT,xaT,xaaT,deT 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,deT of
  P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,xaaT,deT 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,deT of
    P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                       P x  (x. case daT,xT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
```

```
                                daT,case xT,deT,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,deT,xaT,xaaT of
    P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,xaaT of
                                      P x  (x. case daT,xaT,xT,xaaT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xT,xaT,deT,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,deT,xaaT of
      P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,deT,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,deT,xaaT of
        P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT of
                                      P x  (x. case daT,xaT,xaaT,xT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xT,xaT,xaaT,deT 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,deT of
      P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                        xaaaT,case xT,xaT,xaaT,deT 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,deT of
        P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT,daT,daT of
                          P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                    daT,case xaT,deT,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,deT,daT,daT of
                                        P xa  (xa. case xT,xaT,daT,daT of P   )T
                                        | _  (x. dio)E,
                                  xaaT,case xaT,deT,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,deT,daT,daT of
                                          P xa  (xa. case xT,xaT,daT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xaT,deT,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,deT,daT of P xa  (xa. case xT,daT,xaT,daT of P   )T
                          | _  (x. dio)E,
                    daT,case xaT,daT,deT,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,deT,daT of
                                    P xa  (xa. case xT,daT,xaT,daT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xaT,daT,deT,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,deT,daT of
                                      P xa  (xa. case xT,daT,xaT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xaT,daT,deT,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,deT of P xa  (xa. case xT,daT,daT,xaT of P   )T
                          | _  (x. dio)E,
                    daT,case xaT,daT,daT,deT 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,deT of
                                    P xa  (xa. case xT,daT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xaT,daT,daT,deT 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,deT of
                                      P xa  (xa. case xT,daT,daT,xaT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xaT,daT,daT,deT 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,deT,daT,xaaT of
                                  P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case xaT,deT,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,deT,daT,xaaT of
P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                            xaaaT,case xaT,deT,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,deT,daT,xaaT of
  P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,deT,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,deT,xaaT of
                                      P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case xaT,daT,deT,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,deT,xaaT of
 P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,daT,deT,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,deT,xaaT of
    P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,daT,deT,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,deT of
                                       P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,daT,xaaT,deT 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,deT of
 P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
```

```
                                                  xaaaT,case xaT,daT,xaaT,deT 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,deT of
    P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,daT,xaaT,deT 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,deT,daT,xaaT of
                                       P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,deT,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,deT,daT,xaaT of
   P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,daT,xaaT of
     P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xaT,deT,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,deT,xaaT of
                                       P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,daT,deT,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,deT,xaaT of
    P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
```

```
                                                xaaaT,case xaT,daT,deT,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,deT,xaaT of
      P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,daT,deT,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,deT of
                                            P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                            | _  (x. dio)E,
                                       daT,case xaT,daT,xaaT,deT 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,deT of
    P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,daT,xaaT,deT 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,deT of
      P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,daT,xaaT,deT 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,deT,xaaT,daT of
                                       P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,deT,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,deT,xaaT,daT of
P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,deT,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,deT,xaaT,daT of
  P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,deT,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,deT,daT of
                                        P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,deT,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,deT,daT of
P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,xaaT,deT,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,deT,daT of
  P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,xaaT,deT,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,deT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,daT,deT 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,deT of
P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,xaaT,daT,deT 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,deT of
 P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                 P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
                                             daT,case xaT,deT,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,deT,xaaT,xaaaT of
               P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
      xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                 P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,deT,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,deT,xaaaT of
                                                   P xa
(xa. case xT,xaaT,xaT,xaaaT of P   )T
                                                   | _  (x. dio)E,
                                               daT,case xaT,xaaT,deT,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,deT,xaaaT of
                 P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT of
                                                    P xa
(xa. case xT,xaaT,xaaaT,xaT of P   )T
                                                    | _  (x. dio)E,
                                               daT,case xaT,xaaT,xaaaT,deT 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,deT of
                  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
                                                    P xa
 (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                                    | _  (x. dio)E,
                                              daT,case xaT,deT,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,deT,xaaT,xaaaT of
                  P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
```

```
          xaaaaT,case xaT,deT,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,deT,xaaaT of
P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,xaaT,deT,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,deT,xaaaT of
                  P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,deT,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,deT of
P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,xaaT,xaaaT,deT 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,deT of
                  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                    P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                    | _  (x. dio)E,
                               daT,case xaT,deT,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,deT,xaaT,daT of
P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,deT,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,deT,xaaT,daT of
  P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,deT,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,deT,daT of
                                    P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                    | _  (x. dio)E,
                               daT,case xaT,xaaT,deT,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,deT,daT of
P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,xaaT,deT,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,deT,daT of
  P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,xaaT,deT,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,deT of
                                     P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                     | _  (x. dio)E,
                                  daT,case xaT,xaaT,daT,deT 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,deT of
  P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xaT,xaaT,daT,deT 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,deT of
    P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                      P xa
 (xa. case xT,xaT,xaaT,xaaaT of P   )T
                                                      | _  (x. dio)E,
                                                   daT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,deT,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,deT,xaaaT of
P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                   daT,case xaT,xaaT,deT,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,deT,xaaaT of
                  P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,deT,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,deT of
P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                             daT,case xaT,xaaT,xaaaT,deT 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,deT of
                  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
 P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                             daT,case xaT,deT,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,deT,xaaT,xaaaT of
```

```
                  P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,deT,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,deT,xaaaT of
  P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,xaaT,deT,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,deT of
  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
```

```
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,daT,daT of
                      P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                 daT,case xT,deT,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,deT,daT,daT of
                                    P x  (x. case xaT,xT,daT,daT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,deT,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,deT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,deT,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,deT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                       | _  (x. dio)E,
                 daT,case xT,daT,deT,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,deT,daT of
                                    P x  (x. case xaT,daT,xT,daT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,daT,deT,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,deT,daT of
                                       P x  (x. case xaT,daT,xT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,deT,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,deT of P x  (x. case xaT,daT,daT,xT of P   )T
                       | _  (x. dio)E,
                 daT,case xT,daT,daT,deT 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,deT of
                                  P x  (x. case xaT,daT,daT,xT of P   )T
                                  | _  (x. dio)E,
                               xaaT,case xT,daT,daT,deT 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,deT of
                                  P x  (x. case xaT,daT,daT,xT of P   )T
                                  | _  (x. dio)E,
                               xaaT,case xT,daT,daT,deT 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,deT,daT,xaaT of
                                  P x  (x. case xaT,xT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                               daT,case xT,deT,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,deT,daT,xaaT of
 P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,daT,xaaT of
   P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaaT of
                                    P x  (x. case xaT,daT,xT,xaaT of P   )T
                                    | _  (x. dio)E,
                                 daT,case xT,daT,deT,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,deT,xaaT of
P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,daT,deT,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,deT,xaaT of
  P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,daT,deT,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,deT of
                                    P x  (x. case xaT,daT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
                                 daT,case xT,daT,xaaT,deT 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,deT of
P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,daT,xaaT,deT 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,deT of
  P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,daT,xaaT,deT 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,deT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                daT,case xT,deT,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,deT,daT,xaaT of
   P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,deT,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,deT,daT,xaaT of
    P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaaT of
                                      P x  (x. case xaT,daT,xT,xaaT of P   )T
                                      | _  (x. dio)E,
                                daT,case xT,daT,deT,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,deT,xaaT of
    P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,daT,deT,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,deT,xaaT of
     P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,daT,deT,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,deT of
```

```
                                        P x  (x. case xaT,daT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,daT,xaaT,deT 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,deT of
    P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,daT,xaaT,deT 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,deT of
      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,daT,xaaT,deT 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,deT,xaaT,daT of
                                       P x  (x. case xaT,xT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,deT,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,deT,xaaT,daT of
P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaaT,daT of
  P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,daT of
                                    P x  (x. case xaT,xaaT,xT,daT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,xaaT,deT,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,deT,daT of
P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaaT,deT,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,deT,daT of
  P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaaT,deT,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,deT of
                                    P x  (x. case xaT,xaaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                                daT,case xT,xaaT,daT,deT 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,deT of
P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaaT,daT,deT 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,deT of
  P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                 P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
```

```
                                        daT,case xT,deT,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,deT,xaaT,xaaaT of
               P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
      xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xT,deT,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,deT,xaaaT of
                                              P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                                              | _  (x. dio)E,
                                            daT,case xT,xaaT,deT,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,deT,xaaaT of
               P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
       xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xT,xaaT,deT,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,deT of
                                              P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                                              | _  (x. dio)E,
                                            daT,case xT,xaaT,xaaaT,deT 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,deT of
                P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
       xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                  P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
                                                  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                                  | _  (x. dio)E,
                                              daT,case xT,deT,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,deT,xaaT,xaaaT of
                  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaaT of
P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                            daT,case xT,xaaT,deT,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,deT,xaaaT of
                  P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,xaaT,deT,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,deT of
P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                 daT,case xT,xaaT,xaaaT,deT 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,deT of
                   P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                        P x  (x. case xaT,xT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,deT,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,deT,xaaT,daT of
  P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,deT,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,deT,xaaT,daT of
  P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,deT,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,deT,daT of
                                    P x  (x. case xaT,xaaT,xT,daT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaaT,deT,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,deT,daT of
P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaaT,deT,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,deT,daT of
  P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaaT,deT,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,deT of
                                    P x  (x. case xaT,xaaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaaT,daT,deT 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,deT of
P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaaT,daT,deT 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,deT of
    P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                 P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
                                              daT,case xT,deT,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,deT,xaaT,xaaaT of
                  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,deT,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,deT,xaaaT of
P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xT,xaaT,deT,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,deT,xaaaT of
                  P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,xaaT,deT,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,deT of
P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                 daT,case xT,xaaT,xaaaT,deT 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,deT of
                    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
 P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xT,deT,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,deT,xaaT,xaaaT of
                     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
  P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                   daT,case xT,xaaT,deT,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,deT,xaaaT of
                    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,deT,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,deT of
 P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                               daT,case xT,xaaT,xaaaT,deT 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,deT of
                    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,daT,daT of
                          P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                    daT,case xaT,deT,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,deT,daT,daT of
                                 P xa  (xa. case xT,xaT,daT,daT of P   )T
                                 | _  (x. dio)E,
                            xaaT,case xaT,deT,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,deT,daT,daT of
                                  P xa  (xa. case xT,xaT,daT,daT of P   )T
                                  | _  (x. dio)E,
                             xaaT,case xaT,deT,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,deT,daT of
                   P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
              daT,case xaT,daT,deT,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,deT,daT of
                                 P xa  (xa. case xT,daT,xaT,daT of P   )T
                                 | _  (x. dio)E,
                            xaaT,case xaT,daT,deT,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,deT,daT of
                                   P xa  (xa. case xT,daT,xaT,daT of P   )T
                                   | _  (x. dio)E,
                              xaaT,case xaT,daT,deT,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,deT of
                   P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
              daT,case xaT,daT,daT,deT 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,deT of
                                 P xa  (xa. case xT,daT,daT,xaT of P   )T
                                 | _  (x. dio)E,
                            xaaT,case xaT,daT,daT,deT 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,deT of
                                    P xa  (xa. case xT,daT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                                xaaT,case xaT,daT,daT,deT 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,deT,daT,xaaT of
                                  P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                              daT,case xaT,deT,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,deT,daT,xaaT of
 P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xaT,deT,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,deT,daT,xaaT of
   P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,deT,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,deT,xaaT of
                                     P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                     | _  (x. dio)E,
                                 daT,case xaT,daT,deT,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,deT,xaaT of
 P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xaT,daT,deT,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,deT,xaaT of
    P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,daT,deT,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,deT of
                                      P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                      | _  (x. dio)E,
                                daT,case xaT,daT,xaaT,deT 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,deT of
  P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xaT,daT,xaaT,deT 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,deT of
    P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,daT,xaaT,deT 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,deT,daT,xaaT of
                                        P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                  daT,case xaT,deT,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,deT,daT,xaaT of
  P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xaT,deT,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,deT,daT,xaaT of
      P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,deT,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,deT,xaaT of
                                        P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,daT,deT,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,deT,xaaT of
      P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,daT,deT,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,deT,xaaT of
        P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,deT,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,deT of
                                        P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,daT,xaaT,deT 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,deT of
      P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,daT,xaaT,deT 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,deT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,deT 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,deT,xaaT,daT of
                                        P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,deT,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,deT,xaaT,daT of
  P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,deT,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,deT,daT of
                                        P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,deT,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,deT,daT of
  P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,xaaT,deT,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,deT,daT of
  P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,xaaT,deT,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,deT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case xaT,xaaT,daT,deT 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,deT of
 P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xaT,xaaT,daT,deT 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,deT of
  P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                    P xa
(xa. case xT,xaT,xaaT,xaaaT of P   )T
                                                    | _  (x. dio)E,
                                                daT,case xaT,deT,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,deT,xaaT,xaaaT of
                P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,deT,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,deT,xaaaT of
P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,xaaT,deT,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,deT,xaaaT of
                     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                       P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT of
P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,xaaT,xaaaT,deT 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,deT of
                     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                       P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,deT,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,deT,xaaT,xaaaT of
                    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,deT,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,deT,xaaaT of
  P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT of
  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,deT,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,deT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                xaaaT,case xaT,deT,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,deT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,daT of
                                          P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,xaaT,deT,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,deT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,xaaT,deT,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,deT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,deT,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,deT of
                                          P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,xaaT,daT,deT 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,deT of
      P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,xaaT,daT,deT 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,deT of
        P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
   P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,deT,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,deT,xaaT,xaaaT of
                      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,deT,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,deT,xaaaT of
    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,xaaT,deT,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,deT,xaaaT of
                      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                     | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT of
    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                    | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,deT,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,deT,xaaT,xaaaT of
                        P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
               xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,deT,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,deT,xaaaT of
      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                    | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT of
     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                    | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,daT,daT of
                         P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                    daT,case xT,deT,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,deT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,deT,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,deT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,deT,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,deT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                       | _  (x. dio)E,
                daT,case xT,daT,deT,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,deT,daT of
                                    P x  (x. case xaT,daT,xT,daT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,daT,deT,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,deT,daT of
                                      P x  (x. case xaT,daT,xT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xT,daT,deT,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,deT of P x  (x. case xaT,daT,daT,xT of P   )T
                       | _  (x. dio)E,
                daT,case xT,daT,daT,deT 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,deT of
                                    P x  (x. case xaT,daT,daT,xT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,daT,daT,deT 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,deT of
                                      P x  (x. case xaT,daT,daT,xT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xT,daT,daT,deT 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,deT,daT,xaaT of
```

```
                                    P x  (x. case xaT,xT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,deT,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,deT,daT,xaaT of
P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,deT,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,deT,daT,xaaT of
  P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,deT,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,deT,xaaT of
                                    P x  (x. case xaT,daT,xT,xaaT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,daT,deT,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,deT,xaaT of
 P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,daT,deT,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,deT,xaaT of
  P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,daT,deT,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,deT of
                                    P x  (x. case xaT,daT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
```

```
                                daT,case xT,daT,xaaT,deT 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,deT of
  P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,daT,xaaT,deT 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,deT of
    P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,daT,xaaT,deT 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,deT,daT,xaaT of
                                        P x  (x. case xaT,xT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,deT,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,deT,daT,xaaT of
  P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,deT,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,deT,daT,xaaT of
    P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT of
                                        P x  (x. case xaT,daT,xT,xaaT of P   )T
                                        | _  (x. dio)E,
```

```
                                    daT,case xT,daT,deT,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,deT,xaaT of
     P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,deT,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,deT,xaaT of
       P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,deT,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,deT of
                                          P x  (x. case xaT,daT,xaaT,xT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,daT,xaaT,deT 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,deT of
     P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,deT 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,deT of
       P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,deT 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,deT,xaaT,daT of
```

```
                                    P x  (x. case xaT,xT,xaaT,daT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,deT,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,deT,xaaT,daT of
P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,deT,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,deT,xaaT,daT of
  P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,daT of
                                    P x  (x. case xaT,xaaT,xT,daT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaaT,deT,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,deT,daT of
P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaaT,deT,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,deT,daT of
  P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaaT,deT,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,deT of
                                    P x  (x. case xaT,xaaT,daT,xT of P   )T
                                    | _  (x. dio)E,
```

```
                                daT,case xT,xaaT,daT,deT 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,deT of
  P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,xaaT,daT,deT 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,deT of
    P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                 P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                                 | _  (x. dio)E,
                                              daT,case xT,deT,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,deT,xaaT,xaaaT of
                  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaaT of
P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xT,xaaT,deT,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,deT,xaaaT of
                  P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,xaaT,deT,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,deT of
P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                               daT,case xT,xaaT,xaaaT,deT 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,deT of
                  P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
 P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xT,deT,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,deT,xaaT,xaaaT of
                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
  P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                        P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
               xaaaaT,case xT,xaaT,deT,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,deT of
  P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                 daT,case xT,xaaT,xaaaT,deT 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,deT of
                      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                        P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
               xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                        P x  (x. case xaT,xT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                     daT,case xT,deT,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,deT,xaaT,daT of
    P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,deT,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,deT,daT of
                                              P x  (x. case xaT,xaaT,xT,daT of P   )T
                                              | _  (x. dio)E,
                                           daT,case xT,xaaT,deT,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,deT,daT of
      P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                     xaaaT,case xT,xaaT,deT,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,deT,daT of
        P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,deT,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,deT of
                                      P x  (x. case xaT,xaaT,daT,xT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xT,xaaT,daT,deT 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,deT of
    P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaaT,daT,deT 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,deT of
      P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                     daT,case xT,deT,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,deT,xaaT,xaaaT of
                      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                       P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xT,xaaT,deT,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,deT,xaaaT of
                                P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                            xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E,
            xaaaaT,case xT,xaaT,deT,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,deT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                  daT,case xT,xaaT,xaaaT,deT 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,deT of
                                P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,deT,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,deT,xaaT,xaaaT of
                          P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                 xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                        | _  (x. dio)E,
              xaaaaT,case xT,deT,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,deT,xaaaT of
      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E,
           xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,deT,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,deT of
      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
```

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

```
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,deT,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,deT,daT of
                                        P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,deT,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,deT of
                          P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                  daT,case daT,xaT,daT,deT 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,deT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,deT 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,deT of
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                  daT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,deT,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,deT,xaaT of
                                  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case daT,xaT,deT,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,deT,xaaT of
P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,xaT,deT,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,deT of
                                  P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case daT,xaT,xaaT,deT 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,deT of
P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,xaT,xaaT,deT 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,deT of
    P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                  daT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaT,xaaT of
     P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                     xaaaT,case daT,deT,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,deT,xaaT of
                                        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                  daT,case daT,xaT,deT,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,deT,xaaT of
    P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,xaT,deT,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,deT,xaaT of
        P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,deT,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,deT of
                                          P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                          | _  (x. dio)E,
                                   daT,case daT,xaT,xaaT,deT 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,deT of
     P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,xaT,xaaT,deT 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,deT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,daT of
                               P xb  (xaa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                          daT,case daT,deT,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,deT,xaT,daT of
                                          P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case daT,deT,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,deT,xaT,daT of
                                  P xb  (xaa. case xT,xaaT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,deT,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,deT,daT of
                    P xb  (xaa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
              daT,case daT,xaT,deT,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,deT,daT of
                                  P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xaT,deT,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,deT,daT of
                                   P xb  (xaa. case xT,xaT,xaaT,daT of P   )T
                                   | _  (x. dio)E,
                            xaaT,case daT,xaT,deT,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,deT of
                    P xb  (xaa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
              daT,case daT,xaT,daT,deT 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,deT of
                                  P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case daT,xaT,daT,deT 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,deT of
```

```
                                        P xb  (xaa. case xT,xaT,daT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case daT,xaT,daT,deT 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,deT,xaT,xaaT of
                                      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case daT,deT,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,deT,xaT,xaaT of
 P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case daT,deT,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,deT,xaT,xaaT of
   P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case daT,deT,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,deT,xaaT of
                                       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case daT,xaT,deT,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,deT,xaaT of
 P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case daT,xaT,deT,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,deT,xaaT of
  P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
```

```
xaaaT,case daT,xaT,deT,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,deT of
                                           P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case daT,xaT,xaaT,deT 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,deT of
      P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                       xaaaT,case daT,xaT,xaaT,deT 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,deT of
        P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                             P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T
                                             | _  (x. dio)E,
                                        daT,case daT,deT,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,deT,xaT,xaaT of
      P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                       xaaaT,case daT,deT,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,deT,xaT,xaaT of
        P xb  (xaaa. case xT,xaaaT,xaT,xaaT of P   )T | _  (x. dio)E,
```

```
 xaaaT,case daT,deT,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,deT,xaaT of
                                            P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T
                                            | _  (x. dio)E,
                                      daT,case daT,xaT,deT,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,deT,xaaT of
       P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,deT,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,deT,xaaT of
         P xb  (xaaa. case xT,xaT,xaaaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,deT,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,deT of
                                            P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T
                                            | _  (x. dio)E,
                                      daT,case daT,xaT,xaaT,deT 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,deT of
       P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
xaaaT,case daT,xaT,xaaT,deT 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,deT of
         P xb  (xaaa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
  xaaaT,case daT,xaT,xaaT,deT 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,deT,daT,daT of
              P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
        daT,case xT,deT,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,deT,daT,daT of P x  (x. case daT,xT,daT,daT of P   )T
                           | _  (x. dio)E,
                      xaT,case xT,deT,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,deT,daT,daT of
                           P x  (x. case daT,xT,daT,daT of P   )T | _  (x. dio)E,
                      xaT,case xT,deT,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,deT,daT of
              P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
        daT,case xT,daT,deT,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,deT,daT of P x  (x. case daT,daT,xT,daT of P   )T
                           | _  (x. dio)E,
                      xaT,case xT,daT,deT,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,deT,daT of
                           P x  (x. case daT,daT,xT,daT of P   )T | _  (x. dio)E,
                      xaT,case xT,daT,deT,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,deT of
              P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
        daT,case xT,daT,daT,deT 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,deT of P x  (x. case daT,daT,daT,xT of P   )T
                          | _  (x. dio)E,
                     xaT,case xT,daT,daT,deT 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,deT of
                           P x  (x. case daT,daT,daT,xT of P   )T | _  (x. dio)E,
                      xaT,case xT,daT,daT,deT 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,deT,daT,xaT of P x  (x. case daT,xT,daT,xaT of P   )T
                        | _  (x. dio)E,
                   daT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,deT,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,deT,daT,xaT of
                                    P x  (x. case daT,xT,daT,xaT of P   )T
                                    | _  (x. dio)E,
                               xaaT,case xT,deT,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,deT,xaT of P x  (x. case daT,daT,xT,xaT of P   )T
                        | _  (x. dio)E,
                   daT,case xT,daT,deT,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,deT,xaT of
                                    P x  (x. case daT,daT,xT,xaT of P   )T
                                    | _  (x. dio)E,
```

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

```
                                        P x  (x. case daT,daT,xaT,xT of P   )T
                                        | _  (x. dio)E,
                                    xaaT,case xT,daT,xaT,deT 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,deT,xaT,daT of
                           P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                    daT,case xT,deT,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,deT,xaT,daT of
                                      P x  (x. case daT,xT,xaT,daT of P   )T
                                      | _  (x. dio)E,
                                 xaaT,case xT,deT,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,deT,xaT,daT of
                                      P x  (x. case daT,xT,xaT,daT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case xT,deT,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,deT,daT of P x  (x. case daT,xaT,xT,daT of P   )T
                           | _  (x. dio)E,
                    daT,case xT,xaT,deT,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,deT,daT of
                                      P x  (x. case daT,xaT,xT,daT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case xT,xaT,deT,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,deT,daT of
                                      P x  (x. case daT,xaT,xT,daT of P   )T
                                      | _  (x. dio)E,
                                   xaaT,case xT,xaT,deT,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,deT of P x  (x. case daT,xaT,daT,xT of P   )T
                         | _  (x. dio)E,
                  daT,case xT,xaT,daT,deT 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,deT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                   xaaT,case xT,xaT,daT,deT 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,deT of
                                          P x  (x. case daT,xaT,daT,xT of P   )T
                                          | _  (x. dio)E,
                                     xaaT,case xT,xaT,daT,deT 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,deT,xaT,xaaT of
                                       P x  (x. case daT,xT,xaT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,deT,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,deT,xaT,xaaT of
 P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,xaT,xaaT of
   P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT of
                                    P x  (x. case daT,xaT,xT,xaaT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaT,deT,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,deT,xaaT of
P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                           xaaaT,case xT,xaT,deT,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,deT,xaaT of
  P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaT,deT,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,deT of
                                    P x  (x. case daT,xaT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaT,xaaT,deT 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,deT of
P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                           xaaaT,case xT,xaT,xaaT,deT 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,deT of
  P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                          P x  (x. case daT,xT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,deT,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,deT,xaT,xaaT of
     P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,xaaT of
                                          P x  (x. case daT,xaT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaT,deT,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,deT,xaaT of
     P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaT,deT,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,deT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT of
                                        P x  (x. case daT,xaT,xaaT,xT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,xaT,xaaT,deT 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,deT of
     P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaT,xaaT,deT 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,deT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,daT of
                              P x  (x. case daT,xT,xaT,daT of P   )T | _  (x. dio)E,
                        daT,case xT,deT,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,deT,xaT,daT of
                                              P x  (x. case daT,xT,xaT,daT of P   )T
                                              | _  (x. dio)E,
                                         xaaT,case xT,deT,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,deT,xaT,daT of
                                                 P x  (x. case daT,xT,xaT,daT of P   )T
                                                 | _  (x. dio)E,
                                            xaaT,case xT,deT,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,deT,daT of
                        P x  (x. case daT,xaT,xT,daT of P   )T | _  (x. dio)E,
                  daT,case xT,xaT,deT,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,deT,daT of
                                      P x  (x. case daT,xaT,xT,daT of P   )T
                                      | _  (x. dio)E,
                                xaaT,case xT,xaT,deT,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,deT,daT of
                                        P x  (x. case daT,xaT,xT,daT of P   )T
                                        | _  (x. dio)E,
                                  xaaT,case xT,xaT,deT,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,deT of
                        P x  (x. case daT,xaT,daT,xT of P   )T | _  (x. dio)E,
                  daT,case xT,xaT,daT,deT 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,deT of
                                      P x  (x. case daT,xaT,daT,xT of P   )T
                                      | _  (x. dio)E,
                                xaaT,case xT,xaT,daT,deT 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,deT of
                                        P x  (x. case daT,xaT,daT,xT of P   )T
                                        | _  (x. dio)E,
                                  xaaT,case xT,xaT,daT,deT 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,deT,xaT,xaaT of
```

```
                                        P x  (x. case daT,xT,xaT,xaaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xT,deT,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,deT,xaT,xaaT of
     P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,deT,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,deT,xaT,xaaT of
       P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaaT of
                                           P x  (x. case daT,xaT,xT,xaaT of P   )T
                                           | _  (x. dio)E,
                                      daT,case xT,xaT,deT,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,deT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaT,deT,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,deT,xaaT of
         P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT of
                                           P x  (x. case daT,xaT,xaaT,xT of P   )T
                                           | _  (x. dio)E,
```

```
                                daT,case xT,xaT,xaaT,deT 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,deT of
     P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,xaT,xaaT,deT 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,deT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT,xaT,xaaT of
                                           P x  (x. case daT,xT,xaT,xaaT of P   )T
                                           | _  (x. dio)E,
                                     daT,case xT,deT,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,deT,xaT,xaaT of
      P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,xaT,xaaT of
        P x  (x. case daT,xT,xaT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,deT,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,deT,xaaT of
                                           P x  (x. case daT,xaT,xT,xaaT of P   )T
                                           | _  (x. dio)E,
```

```
                                    daT,case xT,xaT,deT,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,deT,xaaT of
       P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,deT,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,deT,xaaT of
         P x  (x. case daT,xaT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,deT,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,deT of
                                          P x  (x. case daT,xaT,xaaT,xT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,xaT,xaaT,deT 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,deT of
       P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaT,xaaT,deT 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,deT of
         P x  (x. case daT,xaT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaT,xaaT,deT 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,deT,daT,daT of
                    P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
              daT,case xaT,deT,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,deT,daT,daT of
                                P xa  (xa. case xT,xaT,daT,daT of P   )T
                                | _  (x. dio)E,
                           xaaT,case xaT,deT,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,deT,daT,daT of
                                 P xa  (xa. case xT,xaT,daT,daT of P   )T
                                 | _  (x. dio)E,
                            xaaT,case xaT,deT,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,deT,daT of
                    P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
              daT,case xaT,daT,deT,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,deT,daT of
                                P xa  (xa. case xT,daT,xaT,daT of P   )T
                                | _  (x. dio)E,
                           xaaT,case xaT,daT,deT,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,deT,daT of
                                 P xa  (xa. case xT,daT,xaT,daT of P   )T
                                 | _  (x. dio)E,
                            xaaT,case xaT,daT,deT,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,deT of
                    P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
              daT,case xaT,daT,daT,deT 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,deT of
                                  P xa  (xa. case xT,daT,daT,xaT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xaT,daT,daT,deT 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,deT of
                                   P xa  (xa. case xT,daT,daT,xaT of P   )T
                                   | _  (x. dio)E,
                               xaaT,case xaT,daT,daT,deT 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,deT,daT,xaaT of
                                  P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case xaT,deT,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,deT,daT,xaaT of
 P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,deT,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,deT,daT,xaaT of
  P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,deT,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,deT,xaaT of
                                  P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                  | _  (x. dio)E,
                             daT,case xaT,daT,deT,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,deT,xaaT of
  P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,daT,deT,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,deT,xaaT of
    P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,daT,deT,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,deT of
                                        P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,daT,xaaT,deT 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,deT of
  P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xaT,daT,xaaT,deT 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,deT of
    P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,daT,xaaT,deT 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,deT,daT,xaaT of
                                         P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                         | _  (x. dio)E,
                                    daT,case xaT,deT,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,deT,daT,xaaT of
    P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,daT,xaaT of
      P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,deT,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,deT,xaaT of
                                      P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xaT,daT,deT,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,deT,xaaT of
      P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,daT,deT,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,deT,xaaT of
        P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,deT,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,deT of
                                      P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xaT,daT,xaaT,deT 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,deT of
```

```
    P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,daT,xaaT,deT 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,deT of
      P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,deT 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,deT,xaaT,daT of
                                       P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,deT,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,deT,xaaT,daT of
  P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                               xaaaT,case xaT,deT,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,deT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xaT,deT,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,deT,daT of
                                       P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,xaaT,deT,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,deT,daT of
P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,xaaT,deT,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,deT,daT of
  P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,xaaT,deT,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,deT of
                                      P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xaT,xaaT,daT,deT 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,deT of
P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,xaaT,daT,deT 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,deT of
  P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                             xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                   P xa
(xa. case xT,xaT,xaaT,xaaaT of P   )T
                                                   | _  (x. dio)E,
                                              daT,case xaT,deT,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,deT,xaaT,xaaaT of
                  P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,deT,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,deT,xaaaT of
P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,xaaT,deT,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,deT,xaaaT of
                  P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT of
P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,xaaT,xaaaT,deT 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,deT of
                  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
        xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
 P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,deT,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,deT,xaaT,xaaaT of
                    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,deT,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,deT,xaaaT of
  P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,xaaT,deT,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,deT,xaaaT of
                    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,xaaT,deT,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,deT of
 P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                               daT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                      P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                      | _  (x. dio)E,
                                   daT,case xaT,deT,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,deT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,deT,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,deT,daT of
                                        P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,deT,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,deT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,xaaT,deT,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,deT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,deT,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,deT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                   daT,case xaT,xaaT,daT,deT 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,deT of
      P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,xaaT,daT,deT 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,deT of
        P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
```

```
   P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,deT,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,deT,xaaT,xaaaT of
                        P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                          P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
               xaaaaT,case xaT,deT,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,deT,xaaaT of
    P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,xaaT,deT,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,deT,xaaaT of
                        P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                    | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT of
    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                  daT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                  | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xaT,deT,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,deT,xaaT,xaaaT of
                      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,deT,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,deT,xaaaT of
     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                  | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                   | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,daT,daT of
                          P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                      daT,case xT,deT,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,deT,daT,daT of
                                          P x  (x. case xaT,xT,daT,daT of P   )T
                                          | _  (x. dio)E,
                                    xaaT,case xT,deT,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,deT,daT,daT of
                                  P x  (x. case xaT,xT,daT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,deT,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,deT,daT of P x  (x. case xaT,daT,xT,daT of P   )T
                  | _  (x. dio)E,
               daT,case xT,daT,deT,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,deT,daT of
                                  P x  (x. case xaT,daT,xT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,daT,deT,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,deT,daT of
                                  P x  (x. case xaT,daT,xT,daT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,daT,deT,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,deT of P x  (x. case xaT,daT,daT,xT of P   )T
                  | _  (x. dio)E,
               daT,case xT,daT,daT,deT 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,deT of
                                  P x  (x. case xaT,daT,daT,xT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,daT,daT,deT 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,deT of
                                  P x  (x. case xaT,daT,daT,xT of P   )T
                                  | _  (x. dio)E,
                           xaaT,case xT,daT,daT,deT 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,deT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case xT,deT,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,deT,daT,xaaT of
 P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,daT,xaaT of
   P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT of
                                       P x  (x. case xaT,daT,xT,xaaT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,daT,deT,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,deT,xaaT of
 P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,daT,deT,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,deT,xaaT of
   P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,daT,deT,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,deT of
                                    P x  (x. case xaT,daT,xaaT,xT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,daT,xaaT,deT 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,deT of
  P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,daT,xaaT,deT 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,deT of
    P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                               xaaaT,case xT,daT,xaaT,deT 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,deT,daT,xaaT of
                                      P x  (x. case xaT,xT,daT,xaaT of P   )T
                                      | _  (x. dio)E,
                                 daT,case xT,deT,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,deT,daT,xaaT of
  P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                              xaaaT,case xT,deT,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,deT,daT,xaaT of
    P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                               xaaaT,case xT,deT,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,deT,xaaT of
                                          P x  (x. case xaT,daT,xT,xaaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,daT,deT,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,deT,xaaT of
      P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,daT,deT,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,deT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,deT,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,deT of
                                          P x  (x. case xaT,daT,xaaT,xT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xT,daT,xaaT,deT 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,deT of
      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,daT,xaaT,deT 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,deT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,deT 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,deT,xaaT,daT of
                                       P x  (x. case xaT,xT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,deT,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,deT,xaaT,daT of
P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,deT,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,deT,xaaT,daT of
  P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,daT of
                                       P x  (x. case xaT,xaaT,xT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xT,xaaT,deT,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,deT,daT of
P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,xaaT,deT,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,deT,daT of
  P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaaT,deT,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,deT of
                                    P x  (x. case xaT,xaaT,daT,xT of P   )T
                                    | _  (x. dio)E,
                               daT,case xT,xaaT,daT,deT 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,deT of
 P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                               xaaaT,case xT,xaaT,daT,deT 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,deT of
   P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
                                                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                                                    | _  (x. dio)E,
                                               daT,case xT,deT,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,deT,xaaT,xaaaT of
                  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
         xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaaT of
P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                               daT,case xT,xaaT,deT,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,deT,xaaaT of
                    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,deT,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,deT of
P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                               daT,case xT,xaaT,xaaaT,deT 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,deT of
                    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
 P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                               daT,case xT,deT,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,deT,xaaT,xaaaT of
                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
  P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xT,xaaT,deT,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,deT,xaaaT of
                    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,deT,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,deT of
  P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                daT,case xT,xaaT,xaaaT,deT 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,deT of
                    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                       P x  (x. case xaT,xT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                    daT,case xT,deT,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,deT,xaaT,daT of
    P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,deT,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,deT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,daT of
                                       P x  (x. case xaT,xaaT,xT,daT of P   )T
                                       | _  (x. dio)E,
                                    daT,case xT,xaaT,deT,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,deT,daT of
    P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xT,xaaT,deT,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,deT,daT of
       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,deT,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,deT of
                                          P x  (x. case xaT,xaaT,daT,xT of P   )T
                                          | _  (x. dio)E,
                                   daT,case xT,xaaT,daT,deT 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,deT of
    P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                 xaaaT,case xT,xaaT,daT,deT 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,deT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
  P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                daT,case xT,deT,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,deT,xaaT,xaaaT of
                    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                        P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,deT,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,deT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xT,xaaT,deT,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,deT,xaaaT of
                        P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                     | _  (x. dio)E,
           xaaaaT,case xT,xaaT,deT,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,deT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                  daT,case xT,xaaT,xaaaT,deT 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,deT of
                        P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                     | _  (x. dio)E,
           xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,deT,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,deT,xaaT,xaaaT of
                        P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                      | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
       P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E,
             xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                        P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
               xaaaaT,case xT,xaaT,deT,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,deT of
       P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,daT,daT of
                                 P xa  (xa. case xT,xaT,daT,daT of P   )T | _  (x. dio)E,
                            daT,case xaT,deT,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,deT,daT,daT of
                                            P xa  (xa. case xT,xaT,daT,daT of P   )T
                                            | _  (x. dio)E,
                                       xaaT,case xaT,deT,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,deT,daT,daT of
                                              P xa  (xa. case xT,xaT,daT,daT of P   )T
                                              | _  (x. dio)E,
                                         xaaT,case xaT,deT,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,deT,daT of
                               P xa  (xa. case xT,daT,xaT,daT of P   )T | _  (x. dio)E,
                          daT,case xaT,daT,deT,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,deT,daT of
                                  P xa  (xa. case xT,daT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xaT,daT,deT,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,deT,daT of
                                  P xa  (xa. case xT,daT,xaT,daT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xaT,daT,deT,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,deT of
                        P xa  (xa. case xT,daT,daT,xaT of P   )T | _  (x. dio)E,
                  daT,case xaT,daT,daT,deT 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,deT of
                                  P xa  (xa. case xT,daT,daT,xaT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xaT,daT,daT,deT 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,deT of
                                  P xa  (xa. case xT,daT,daT,xaT of P   )T
                                  | _  (x. dio)E,
                              xaaT,case xaT,daT,daT,deT 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,deT,daT,xaaT of
                                P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                | _  (x. dio)E,
                            daT,case xaT,deT,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,deT,daT,xaaT of
    P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,daT,xaaT of
      P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,deT,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,deT,xaaT of
                                          P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xaT,daT,deT,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,deT,xaaT of
     P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,daT,deT,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,deT,xaaT of
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,deT,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,deT of
                                          P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xaT,daT,xaaT,deT 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,deT of
```

```
      P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,daT,xaaT,deT 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,deT of
        P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,deT 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,deT,daT,xaaT of
                                         P xa  (xa. case xT,xaT,daT,xaaT of P   )T
                                         | _  (x. dio)E,
                                      daT,case xaT,deT,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,deT,daT,xaaT of
      P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,daT,xaaT of
        P xa  (xa. case xT,xaT,daT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,deT,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,deT,xaaT of
                                         P xa  (xa. case xT,daT,xaT,xaaT of P   )T
                                         | _  (x. dio)E,
                                      daT,case xaT,daT,deT,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,deT,xaaT of
```

```
       P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,deT,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,deT,xaaT of
         P xa  (xa. case xT,daT,xaT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,deT,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,deT of
                                          P xa  (xa. case xT,daT,xaaT,xaT of P   )T
                                          | _  (x. dio)E,
                                    daT,case xaT,daT,xaaT,deT 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,deT of
       P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,daT,xaaT,deT 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,deT of
         P xa  (xa. case xT,daT,xaaT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,daT,xaaT,deT 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,deT,xaaT,daT of
                                       P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                       | _  (x. dio)E,
                                  daT,case xaT,deT,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,deT,xaaT,daT of
    P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xaT,deT,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,deT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,deT,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,deT,daT of
                                         P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                         | _  (x. dio)E,
                                      daT,case xaT,xaaT,deT,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,deT,daT of
      P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
                                                   xaaaT,case xaT,xaaT,deT,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,deT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,deT,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,deT of
                                         P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                         | _  (x. dio)E,
                                      daT,case xaT,xaaT,daT,deT 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,deT of
      P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
```

```
                                                    xaaaT,case xaT,xaaT,daT,deT 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,deT of
       P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
   P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,deT,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,deT,xaaT,xaaaT of
                     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,deT,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,deT,xaaaT of
   P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xaT,xaaT,deT,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,deT,xaaaT of
                     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                   | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT of
    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
                                                   daT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                   | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
     P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,deT,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,deT,xaaT,xaaaT of
                       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,deT,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,deT,xaaaT of
      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                    | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                      P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                    | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                          P xa  (xa. case xT,xaT,xaaT,daT of P   )T
                                          | _  (x. dio)E,
                                       daT,case xaT,deT,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,deT,xaaT,daT of
      P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xaT,deT,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,deT,xaaT,daT of
         P xa  (xa. case xT,xaT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,deT,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,deT,daT of
                                                 P xa  (xa. case xT,xaaT,xaT,daT of P   )T
                                                 | _  (x. dio)E,
                                              daT,case xaT,xaaT,deT,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,deT,daT of
        P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xaT,xaaT,deT,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,deT,daT of
         P xa  (xa. case xT,xaaT,xaT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,deT,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,deT of
                                        P xa  (xa. case xT,xaaT,daT,xaT of P   )T
                                        | _  (x. dio)E,
                                    daT,case xaT,xaaT,daT,deT 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,deT of
        P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
xaaaT,case xaT,xaaT,daT,deT 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,deT of
          P xa  (xa. case xT,xaaT,daT,xaT of P   )T | _  (x. dio)E,
  xaaaT,case xaT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xaT,deT,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,deT,xaaT,xaaaT of
                            P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                    xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                          P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,deT,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,deT,xaaaT of
       P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
```

```
daT,case xaT,xaaT,deT,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,deT,xaaaT of P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T
                   | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,deT,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,deT of
      P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
daT,case xaT,xaaT,xaaaT,deT 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,deT of P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T
                   | _  (x. dio)E,
           xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                     P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
       P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xaT,deT,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,deT,xaaT,xaaaT of
                    P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
           xaaaaT,case xaT,deT,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,deT,xaaT,xaaaT of
                      P xa  (xa. case xT,xaT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xaT,deT,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,deT,xaaaT of
       P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xaT,xaaT,deT,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,deT,xaaaT of
                     P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,deT,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,deT,xaaaT of
                       P xa  (xa. case xT,xaaT,xaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xaT,xaaT,deT,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,deT of
       P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
 daT,case xaT,xaaT,xaaaT,deT 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,deT of
```

```
                  P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
          xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT of
                    P xa  (xa. case xT,xaaT,xaaaT,xaT of P   )T | _  (x. dio)E,
            xaaaaT,case xaT,xaaT,xaaaT,deT 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,deT,daT,daT of
                          P x  (x. case xaT,xT,daT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,deT,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,deT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,deT,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,deT,daT,daT of
                                       P x  (x. case xaT,xT,daT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,deT,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,deT,daT of
                          P x  (x. case xaT,daT,xT,daT of P   )T | _  (x. dio)E,
                     daT,case xT,daT,deT,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,deT,daT of
                                       P x  (x. case xaT,daT,xT,daT of P   )T
                                       | _  (x. dio)E,
                                  xaaT,case xT,daT,deT,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,deT,daT of
                                    P x  (x. case xaT,daT,xT,daT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,deT,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,deT of
                         P x  (x. case xaT,daT,daT,xT of P   )T | _  (x. dio)E,
                  daT,case xT,daT,daT,deT 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,deT of
                                    P x  (x. case xaT,daT,daT,xT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,daT,deT 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,deT of
                                    P x  (x. case xaT,daT,daT,xT of P   )T
                                    | _  (x. dio)E,
                                 xaaT,case xT,daT,daT,deT 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,deT,daT,xaaT of
                                    P x  (x. case xaT,xT,daT,xaaT of P   )T
                                    | _  (x. dio)E,
                                 daT,case xT,deT,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,deT,daT,xaaT of
 P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,deT,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,deT,daT,xaaT of
       P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT of
                                       P x  (x. case xaT,daT,xT,xaaT of P   )T
                                       | _  (x. dio)E,
                                    daT,case xT,daT,deT,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,deT,xaaT of
      P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,deT,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,deT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,deT,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,deT of
                                       P x  (x. case xaT,daT,xaaT,xT of P   )T
                                       | _  (x. dio)E,
                                    daT,case xT,daT,xaaT,deT 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,deT of
      P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,daT,xaaT,deT 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,deT of
       P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,deT 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,deT,daT,xaaT of
                                           P x  (x. case xaT,xT,daT,xaaT of P   )T
                                           | _  (x. dio)E,
                                     daT,case xT,deT,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,deT,daT,xaaT of
      P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,daT,xaaT of
        P x  (x. case xaT,xT,daT,xaaT of P   )T | _  (x. dio)E,
 xaaaT,case xT,deT,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,deT,xaaT of
                                              P x  (x. case xaT,daT,xT,xaaT of P   )T
                                              | _  (x. dio)E,
                                        daT,case xT,daT,deT,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,deT,xaaT of
       P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,deT,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,deT,xaaT of
        P x  (x. case xaT,daT,xT,xaaT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,deT,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,deT of
                                                P x  (x. case xaT,daT,xaaT,xT of P   )T
                                                | _  (x. dio)E,
                                          daT,case xT,daT,xaaT,deT 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,deT of
       P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,daT,xaaT,deT 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,deT of
        P x  (x. case xaT,daT,xaaT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,daT,xaaT,deT 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,deT,xaaT,daT of
                                        P x  (x. case xaT,xT,xaaT,daT of P   )T
                                        | _  (x. dio)E,
                                     daT,case xT,deT,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,deT,xaaT,daT of
    P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                  xaaaT,case xT,deT,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,deT,daT of
                                             P x  (x. case xaT,xaaT,xT,daT of P   )T
                                             | _  (x. dio)E,
                                          daT,case xT,xaaT,deT,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,deT,daT of
    P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaaT,deT,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,deT,daT of
       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,deT,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,deT of
                                             P x  (x. case xaT,xaaT,daT,xT of P   )T
                                             | _  (x. dio)E,
                                          daT,case xT,xaaT,daT,deT 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,deT of
    P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
                                                xaaaT,case xT,xaaT,daT,deT 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,deT of
```

```
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
   P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xT,deT,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,deT,xaaT,xaaaT of
                        P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                          P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                xaaaaT,case xT,deT,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,deT,xaaaT of
    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                                                  daT,case xT,xaaT,deT,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,deT,xaaaT of
                          P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
                xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E,
           xaaaaT,case xT,xaaT,deT,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,deT of
    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
                                                   daT,case xT,xaaT,xaaaT,deT 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,deT of
                          P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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. xaaaa. case (case case (daT,case xaT,deT,xaaT,xaaaT of
     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                    daT,case xT,deT,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,deT,xaaT,xaaaT of
                           P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
               xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                     | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
                    | _  (x. dio)E,
          xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,deT,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,deT of
      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                    | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                      P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,daT of
                                            P x  (x. case xaT,xT,xaaT,daT of P   )T
                                            | _  (x. dio)E,
                                       daT,case xT,deT,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,deT,xaaT,daT of
      P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
                                                    xaaaT,case xT,deT,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,deT,xaaT,daT of
        P x  (x. case xaT,xT,xaaT,daT of P   )T | _  (x. dio)E,
 xaaaT,case xT,deT,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,deT,daT of
                                              P x  (x. case xaT,xaaT,xT,daT of P   )T
                                              | _  (x. dio)E,
                                     daT,case xT,xaaT,deT,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,deT,daT of
       P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,deT,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,deT,daT of
         P x  (x. case xaT,xaaT,xT,daT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,deT,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,deT of
                                              P x  (x. case xaT,xaaT,daT,xT of P   )T
                                              | _  (x. dio)E,
                                     daT,case xT,xaaT,daT,deT 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,deT of
       P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
xaaaT,case xT,xaaT,daT,deT 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,deT of
         P x  (x. case xaT,xaaT,daT,xT of P   )T | _  (x. dio)E,
  xaaaT,case xT,xaaT,daT,deT 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,deT,xaaT,xaaaT of
    P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
                                                 daT,case xT,deT,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,deT,xaaT,xaaaT of
                        P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
               xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                      | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
       P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,deT,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,deT,xaaaT of P x  (x. case xaT,xaaT,xT,xaaaT of P   )T
```

```
                  | _  (x. dio)E,
          xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                     P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,deT,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,deT of
     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
daT,case xT,xaaT,xaaaT,deT 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,deT of P x  (x. case xaT,xaaT,xaaaT,xT of P   )T
                  | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
                     P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT,xaaT,xaaaT of
      P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xT,deT,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,deT,xaaT,xaaaT of P x  (x. case xaT,xT,xaaT,xaaaT of P   )T
                   | _  (x. dio)E,
           xaaaaT,case xT,deT,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,deT,xaaT,xaaaT of
                     P x  (x. case xaT,xT,xaaT,xaaaT of P   )T | _  (x. dio)E,
             xaaaaT,case xT,deT,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,deT,xaaaT of
       P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
 daT,case xT,xaaT,deT,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,deT,xaaaT of
                    P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,deT,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,deT,xaaaT of
                      P x  (x. case xaT,xaaT,xT,xaaaT of P   )T | _  (x. dio)E,
              xaaaaT,case xT,xaaT,deT,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,deT of
       P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
 daT,case xT,xaaT,xaaaT,deT 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,deT of
                    P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
            xaaaaT,case xT,xaaT,xaaaT,deT 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,deT of
```

```
                P x  (x. case xaT,xaaT,xaaaT,xT of P   )T | _  (x. dio)E,
          xaaaaT,case xT,xaaT,xaaaT,deT 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  | _  *) =
```