# My Project

Generated by Doxygen 1.8.10

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## Contents

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# Hierarchical Index

## 1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

# Chapter 2

# Class Index

## 2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

# Chapter 3

# File Index

## 3.1 File List

Here is a list of all documented files with brief descriptions:

# Chapter 4

# Class Documentation

## 4.1 Arc_t Struct Reference

### Public Attributes

- int **delai**
- t_Dep **dep**
- Node_dfg ∗ **next**

The documentation for this struct was generated from the following file:

- Node_dfg.h

## 4.2 asfig Struct Reference

### Public Attributes

- struct utdic ∗ **GLB_DIC**
- struct uttyp ∗ **GLB_SYM**
- struct uttyp ∗ **MEM_TAB**
- struct asosc ∗ **OUT_SEC**
- struct asisc ∗ **IN_SEC**
- struct asobj ∗ **OBJECTS**
- unsigned int **FLAG**

The documentation for this struct was generated from the following file:

- asm200.h

## 4.3 asisc Struct Reference

### Public Attributes

- struct asisc ∗ **NEXT**
- char ∗ **IDENT**
- struct asosc ∗ **OUT_SEC**
- unsigned int **POSITION**

- unsigned int **FLAG**

The documentation for this struct was generated from the following file:

- asm200.h

## 4.4 asiss Struct Reference

### Public Attributes

- struct asiss ∗ **NEXT**
- unsigned int **ADDR**
- unsigned int **SIZE**
- unsigned int **FLAG**

The documentation for this struct was generated from the following file:

- asm200.h

## 4.5 asobj Struct Reference

### Public Attributes

- struct asobj ∗ **NEXT**
- char ∗ **IDENT**
- struct utdic ∗ **SYM_DIC**
- struct uttyp ∗ **SEC_SYM**
- unsigned int **FLAG**

The documentation for this struct was generated from the following file:

- asm200.h

## 4.6 asosc Struct Reference

### Public Attributes

- struct asosc ∗ **NEXT**
- char ∗ **IDENT**
- unsigned int **INS_NBR**
- struct asiss ∗∗ **CUR_ISS**
- struct asiss ∗∗ **SUB_SEC**
- unsigned int **ADDR**
- unsigned int **SIZE**
- unsigned int **FLAG**

The documentation for this struct was generated from the following file:

- asm200.h

## 4.7 Basic_block Class Reference

class representing a Basic_block of a fonction

```
#include <Basic_block.h>
```

### Public Member Functions

- Basic_block ()

  *Constructor of a Basic Block.*
- ∼Basic_block ()

  *Destructor of a basic block.*
- void set_head (Line ∗)

  *setter of the head of the basic block*
- void set_end (Line ∗)

  *setter of the end of the basic block*
- Line ∗ get_head ()

  *get the head of the basic block*
- Line ∗ get_end ()

  *get the end of the basic block*
- void set_branch (Line ∗)

  *setter of line corresponding to the branch*
- Line ∗ get_branch ()

  *get the line corresponding to the branch*
- bool is_labeled ()

  *Returns true if the first line of the block is a label.*
- void set_index (int i)

  *set the index of the basic block*
- int get_index ()

  *get the index of the basic block*
- int size ()

  *returns the size (in lines) of the basic block*
- int get_nb_succ ()

  *returns/gets the number of successors of the basic block*
- int get_nb_pred ()

  *returns/gets the number of predecessors of the basic block*
- void set_successor1 (Basic_block ∗BB)

  *setter of the successor of the basic block*
- Basic_block ∗ get_successor1 ()

  *get the successor of the basic block*
- void set_successor2 (Basic_block ∗BB)

  *setter of the successor of the basic block*
- Basic_block ∗ get_successor2 ()

  *get the successor of the basic block*
- void set_predecessor (Basic_block ∗BB)

  *setter of the predecessor of the basic block*
- Basic_block ∗ get_predecessor (int)

  *get the ith predecessor of the basic block*
- int get_nb_inst ()

  *returns the number of instructions*
- Line ∗ get_first_line_instruction ()

*return the line associated with the first instruction of the basic block, NULL if any*

- Instruction $*$ get_first_instruction ()

  *return the first instruction of the basic block, NULL if any*
- Instruction $*$ get_last_instruction ()

  *return the last instruction of the basic block, NULL if any*
- Instruction $*$ get_instruction_at_index (int)

  *returns the instruction at the given index, NULL if any*
- void link_instructions ()

  *link instructions in the order they appear in the code*
- void comput_pred_succ_dep ()

  *comput dependances predecessors and successors of each instructions in the BB*
- void reset_pred_succ_dep ()

  *reset dependances predecessors and successors of each instructions in the BB to be able to recompute them*
- string get_content ()

  *return a string with the basic block content*
- void display ()

  *display the basic block*
- void restitution (string const)

  *restitute the basic block in a file*
- void set_link_succ_pred (Basic_block $*$)

  *set the parameter as a BB successor of this and this as a BB predecessor of the parameter*
- bool is_delayed_slot (Instruction $*$)

  *test if the instruction is in the delayed slots of the branch terminating the BB if any*
- int nb_cycles ()

  *compute the number of cycles to execute the instruction of the basic bloc*
- void apply_scheduling (list$<$ Node_dfg $* > *$)

  *change the order of instruction with the one given in the parameter list*
- void reg_rename (list$<$ int $> *$)

  *rename registers in the basic bloc using as available register numbers the ones give in the parameter list*
- void reg_rename ()

  *rename registers in the basic bloc using available registers according to the liveness analysis*
- void test ()

  *this method is to be used to test other methods*
- void compute_use_def ()

  *Compute the Use and Def vectors.*
- void compute_def_liveout ()

  *Compute the DefLiveOut vector.*

## Static Public Member Functions

- static void show_dependances (Instruction $*$, Instruction $*$)

  *prints dependance between both instructions*

## Public Attributes

- vector$<$ bool $>$ Use

  *ith element is true is Ri is used in the basic block before any potential read*
- vector$<$ bool $>$ Def

  *ith element is true is Ri is defined in the basic block before any potential read*
- vector$<$ bool $>$ LiveIn

*ith element is true is Ri is alived at the enter of the basic block*

- vector< bool > LiveOut

  *ith element is true is Ri is alived at the enter of the basic block*
- vector< int > DefLiveOut

  *ieme element contient l'index de l'instruction qui définit le registreRi s'il est vivant en sortie, -1 sinon*
- vector< bool > Domin

  *ieme element vaut vrai si le basic block i domine this*

### 4.7.1 Detailed Description

class representing a Basic_block of a fonction

### 4.7.2 Member Function Documentation

#### 4.7.2.1 void Basic_block::apply_scheduling ( list< **Node_dfg** * > * )

change the order of instruction with the one given in the parameter list

The documentation for this class was generated from the following file:

- Basic_block.h

## 4.8 Cfg Class Reference

class representing control flow graph

`#include <Cfg.h>`

### Public Member Functions

- Cfg (Basic_block *, int)

  *Constructor of Cfg.*
- ~Cfg ()

  *Destructor of Cfg.*
- Basic_block * get_head ()

  *get the head of the cfg*
- void display (Basic_block *)

  *Display cfg, when you call this method you have to affect the fisrt parameter to NULL.*
- void restitution (Basic_block *, string const )

  *Restitut the cfg in file with DOT, when you call this method you have to affect the fisrt parameter to NULL.*

### 4.8.1 Detailed Description

class representing control flow graph

The documentation for this class was generated from the following file:

- Cfg.h

## 4.9 dep Struct Reference

### Public Attributes

- Instruction ∗ **inst**
- t_Dep **type**

The documentation for this struct was generated from the following file:

- Instruction.h

## 4.10 Dfg Class Reference

class representing a Dfg of a Basic block, a data flow graph that is to be used to calculate the critical path and schedule code

```
#include <Dfg.h>
```

### Public Member Functions

- Dfg (Basic_block ∗)

  *Constructor of Dfg given a basic block.*
- ∼Dfg ()

  *Destructor of Dfg.*
- void build_dfg (Node_dfg ∗, bool)

  *Build the Dfg, when you call this method you have to affect the fisrt parameter to NULL and the second to true.*
- void display (Node_dfg ∗, bool)

  *Display the Dfg, when you call this method you have to affect the fisrt parameter to NULL and the second to true.*
- void restitute (Node_dfg ∗, string const, bool)

  *restitute the Dfg, when you call this method you have to affect the fisrt parameter to NULL and the third to true*
- bool read_test ()

  *tests if all node have been read*
- void comput_critical_path ()

  *comput the node weight needed for critical path computation of the Dfg*
- void **compute_nb_descendant** ()
- void scheduling (bool)

  *order the instructions in the basic block according to an algorithm list*
- void **apply_scheduling** ()
- int get_critical_path ()

  *returns the highest weigth of nodes*
- void **display_sheduled_instr** ()

### 4.10.1 Detailed Description

class representing a Dfg of a Basic block, a data flow graph that is to be used to calculate the critical path and schedule code

The documentation for this class was generated from the following file:

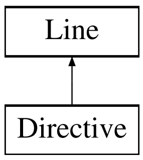
- Dfg.h

## 4.11 Directive Class Reference

class representing an Directive herited by Line

```
#include <Directive.h>
```

Inheritance diagram for Directive:



### Public Member Functions

- Directive (string)

  *Constructor of the Directive.*
- Directive (string, string)

  *Constructor of the Directive with directive, content and an boolean.*
- Directive (string, string, bool)

  *Constructor of the Directive with directive, content and an boolean.*
- virtual ∼Directive ()

  *Destructor of the Directive.*
- virtual t_Line type_line ()

  *get the type of the line*
- virtual string to_string ()

  *get the string of the Directive*
- virtual string get_content ()

  *get the string of the Directive*
- virtual void set_content (string)

  *set the string of the Directive*
- bool is_function ()

  *return true if the directive indicate a function*
- virtual t_Inst get_type ()

  *return the type of the instruction*

### Public Attributes

- string **_dir**
- string **_value**
- bool **_isfunction**

### Additional Inherited Members

### 4.11.1 Detailed Description

class representing an Directive herited by Line

The documentation for this class was generated from the following file:

- Directive.h

## 4.12 Function Class Reference

class representing a Function on a program

`#include <Function.h>`

### Public Member Functions

- Function ()

  *Constructor of a function.*
- ∼Function ()

  *Destructor of a function.*
- void set_head (Line ∗)

  *setter of the head of the function*
- void set_end (Line ∗)

  *setter of the end of the function*
- Line ∗ get_head ()

  *get the head of the function*
- Basic_block ∗ **get_firstBB** ()
- Line ∗ get_end ()

  *get the ending Line of the function*
- void display ()

  *display the function*
- int size ()

  *get number of Lines of the function*
- void restitution (string const)

  *restitute the function in a file*
- void add_BB (Line ∗, Line ∗, Line ∗, int)

  *creates a new BB with the given start line, end line and branch line and its index, add it to the BB list of this*
- void comput_basic_block ()

  *Calculate the basics bolck of the function.*
- int nbr_BB ()

  *get the number of Basic block in the function*
- Basic_block ∗ get_BB (int)

  *get the Basic Block at a position in the BB list*
- list< Basic_block ∗ >::iterator bb_list_begin ()

  *iterators of the BB list*
- list< Basic_block ∗ >::iterator **bb_list_end** ()
- void comput_label ()

  *comput labels of the function in list*
- Label ∗ get_label (int)

  *get a specific label of the function*
- int nbr_label ()

  *get the size of the list label*
- Basic_block ∗ find_label_BB (OPLabel ∗)

  *Get the basic block that starts with a given label (operand)*
- void comput_succ_pred_BB ()

  *Computes the successors and predecessors of each Basic block.*
- void test ()

  *method to perform some test, usefull for testing methods on basic blocks*
- void compute_live_var ()

  *computes live variable for each basic blocks*
- void compute_dom ()

  *computes dominators for each basic blocks*

### 4.12.1 Detailed Description

class representing a Function on a program

The documentation for this class was generated from the following file:

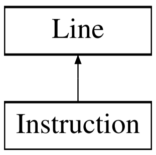
- Function.h

## 4.13 Instruction Class Reference

class representing an instruction which herited by Line

`#include <Instruction.h>`

Inheritance diagram for Instruction:



### Public Member Functions

- Instruction (string, t_Operator, t_Inst, Operand ∗, Operand ∗, Operand ∗)

  *get the Opcode value accessor of the opcode*
- Instruction (t_Operator, Operand ∗, Operand ∗, Operand ∗)

  *Constructor with 3 Operands of the class instruction.*
- Instruction (t_Operator, Operand ∗, Operand ∗)

  *Constructor with 2 Operands of the class instruction.*
- Instruction (t_Operator, Operand ∗)

  *Constructor with 1 Operand of the class instruction.*
- Instruction (t_Operator)

  *Constructor without Operands of the class instruction.*
- virtual ∼Instruction ()

  *Destructor of the class instruction.*
- bool is_branch ()

  *test if the instruction is a branch*
- bool is_call ()

  *test if the instruction is a call*
- bool is_cond_branch ()

  *test if the instruction is a conditionnal branch*
- bool is_indirect_branch ()

  *test if the instruction a branch and the target adress is in a register*
- bool is_nop ()

  *test if the instruction a branch and the target adress is in a register*
- bool is_mem ()

  *test if the instruction is a memory access*
- bool is_mem_load ()

  *test if the instruction is a memory access that reads a value*
- bool is_mem_store ()

  *test if the instruction is a memory access that writes a value*

- bool is_dep_RAW1 (Instruction ∗i2)

    *return if there is dependance RAW between the current instruction and the first source operand of i2*
- bool is_dep_RAW2 (Instruction ∗i2)

    *return if there is dependance RAW between the current instruction and the second source operand of i2*
- bool is_dep_WAR1 (Instruction ∗i2)

    *test if there is dependance WAR between the first source operande of the current instruction if any and the destination register operande i2 if any*
- bool is_dep_WAR2 (Instruction ∗i2)

    *test if there is dependance WAR between the second source operande of the current instruction if any and the destination register operande i2 if any*
- OPRegister ∗ get_reg_dst ()

    *get the register destination of the instruction, if any*
- OPRegister ∗ get_reg_src1 ()

    *get the first register source of the instruction*
- OPRegister ∗ get_reg_src2 ()

    *get the second register source of the instruction*
- OPLabel ∗ get_op_label ()

    *get the label operand of the instruction, if any*
- t_Operator **get_opcode** ()
- string string_opcode ()

    *get the string Opcode value accessor of the string opcode*
- void set_opcode (t_Operator newop)

    *set the opcode value setter of the opcode*
- t_Format get_format ()

    *get the format of the Instruction accessor of the format (see Enum_type.h)*
- virtual t_Inst get_type ()

    *get the Type of the Instruction accessor of the Type (see Enum_type.h)*
- virtual t_Line type_line ()

    *get the type of the line*
- virtual string to_string ()

    *get the name string instruction*
- virtual string get_content ()

    *get the string of the instruction*
- virtual void set_content (string)

    *set the string of the instruction*
- string string_form ()

    *set the string format*
- string string_type ()

    *set the string Type of instruction*
- int get_index ()

    *get the index of instruction*
- void set_index (int)

    *set the index of instruction*
- t_Dep is_dependant (Instruction ∗i2)

    *get the dependance between the current instruction and i2*
- bool is_dep_RAW (Instruction ∗i2)

    *get the information if there is dependance RAW between the current instruction and i2*
- bool is_dep_WAR (Instruction ∗i2)

    *get the information if there is dependance WAR between the current instruction and i2*
- bool is_dep_WAW (Instruction ∗i2)

    *get the information if there is dependance WAW between the current instruction and i2*

- bool is_dep_MEM (Instruction ∗i2)

  *test if there is dependance MEMDEP between the current instruction and i2*
- int get_nbOp ()

  *get the number of operand*
- void set_number_oper (int)

  *set the number of operand*
- void set_link_succ_pred (Instruction ∗)

  *set the parameter as successor and this as predecessor of the parameter*
- void set_next (Instruction ∗)

  *set the successor of the Instruction*
- Instruction ∗ get_next ()

  *get the successor of the Instruction (given by the schedule of instruction in its basic block)*
- void set_prev (Instruction ∗)

  *setter of the predecessor of the Instruction*
- Instruction ∗ get_prev ()

  *get the predecessor of the Instruction (given by the schedule of instruction in its basic block)*
- void add_pred_dep (dep ∗)

  *add a dependance with a predecessor instruction to the dependance type list*
- dep ∗ get_pred_dep (int i)

  *get the dependance type with the ith predecessor instruction of the current instruction*
- void add_succ_dep (dep ∗)

  *add a dependance with a successor to list of the dependance type of successors*
- void reset_pred_succ_dep ()

  *reset succ and pred dependances of this*
- list< dep ∗ >::iterator **succ_begin** ()
- list< dep ∗ >::iterator **succ_end** ()
- dep ∗ get_succ_dep (int i)

  *get the ieme dependance type with successors from successor dependance type list of the current instruction*
- int get_nb_succ ()

  *get the number of successor (dependance) of the Instruction*
- int get_nb_pred ()

  *get the number of predecessor (dependance) of the Instruction*
- int get_latency ()

  *return the latency of the instruction*
- void print_succ_dep ()

  *print the dependance of this with instructions denoted by their index and the dependance type*

## Static Public Member Functions

- static bool **is_writed_between** (int dst, Instruction ∗i1, Instruction ∗i2exclu)

## Additional Inherited Members

### 4.13.1 Detailed Description

class representing an instruction which herited by Line

### 4.13.2 Constructor & Destructor Documentation

#### 4.13.2.1 Instruction::Instruction ( string , t_Operator , t_Inst , Operand ∗ , Operand ∗ , Operand ∗ )

get the Opcode value accessor of the opcode

Constructor of the class instruction

### 4.13.3 Member Function Documentation

#### 4.13.3.1 int Instruction::get_nbOp ( )

get the number of operand

**Returns**

return the number of operand

#### 4.13.3.2 bool Instruction::is_dep_MEM ( Instruction ∗ *i2* )

test if there is dependance MEMDEP between the current instruction and i2

**Returns**

return true if there is a MEMDEP dependance

#### 4.13.3.3 bool Instruction::is_dep_RAW ( Instruction ∗ *i2* )

get the information if there is dependance RAW between the current instruction and i2

**Returns**

return true if there is a RAW dependance

#### 4.13.3.4 bool Instruction::is_dep_RAW1 ( Instruction ∗ *i2* )

return if there is dependance RAW between the current instruction and the first source operand of i2

**Returns**

return true if there is a RAW dependance between the current instruction and the first source operand of i2

#### 4.13.3.5 bool Instruction::is_dep_RAW2 ( Instruction ∗ *i2* )

return if there is dependance RAW between the current instruction and the second source operand of i2

**Returns**

return true if there is a RAW dependance between the current instruction and the second source register operand of i2

#### 4.13.3.6 bool Instruction::is_dep_WAR ( **Instruction** ∗ *i2* )

get the information if there is dependance WAR between the current instruction and i2

**Returns**

return true if there is a WAR dependance

#### 4.13.3.7 bool Instruction::is_dep_WAR1 ( **Instruction** ∗ *i2* )

test if there is dependance WAR between the first source operande of the current instruction if any and the destination register operande i2 if any

**Returns**

return true if there is a WAR dependance between the first source operande of the current instruction if any and the destination register operande i2 if any

#### 4.13.3.8 bool Instruction::is_dep_WAR2 ( **Instruction** ∗ *i2* )

test if there is dependance WAR between the second source operande of the current instruction if any and the destination register operande i2 if any

**Returns**

return true if there is a WAR dependance between the second source operande of the current instruction if any and the destination register operande i2 if any

#### 4.13.3.9 bool Instruction::is_dep_WAW ( **Instruction** ∗ *i2* )

get the information if there is dependance WAW between the current instruction and i2

**Returns**

return true if there is a WAW dependance

#### 4.13.3.10 t_Dep Instruction::is_dependant ( **Instruction** ∗ *i2* )

get the dependance between the current instruction and i2

**Returns**

return "RAW", "WAR", "WAW", "MEMDEP" or "not dependant" in format enum

The documentation for this class was generated from the following file:

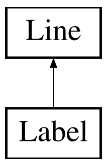
- Instruction.h

## 4.14 Label Class Reference

class representing an Label herited by Line

```
#include <Label.h>
```

Inheritance diagram for Label:



### Public Member Functions

- Label (string)

  *Constructor of the Label.*
- virtual ∼Label ()

  *Destructor of the Label.*
- virtual t_Line type_line ()

  *get the type of the line*
- virtual string to_string ()

  *get the string of Label*
- virtual string get_content ()

  *get the string of the Label*
- virtual void set_content (string)

  *set the string of the Label*
- virtual t_Inst get_type ()

  *return the type of the instruction*

### Additional Inherited Members

### 4.14.1 Detailed Description

class representing an Label herited by Line

The documentation for this class was generated from the following file:

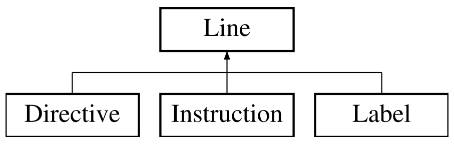
- Label.h

## 4.15 Line Class Reference

Abstract class representing an Line.

```
#include <Line.h>
```

Inheritance diagram for Line:



### Public Member Functions

- virtual ∼Line ()

    *Virtual destructor.*
- virtual string get_content ()=0

    *get the string of the line virtual getter*
- virtual void set_content (string)=0

    *set the string of the line virtual setter*
- virtual t_Line type_line ()=0

    *get the type of the line virtual accessor of the type*
- virtual string to_string ()=0

    *get the name string accessor of the type line*
- virtual t_Inst get_type ()=0

    *return the type of the instruction*
- bool isInst ()

    *tests if the line is an instruction*
- bool isLabel ()

    *tests if the line is a label*
- bool isDirective ()

    *tests if the line is a directive*
- void set_next (Line ∗newsuccessor)

    *set the next line*
- Line ∗ get_prev ()

    *get the previous line*
- void set_prev (Line ∗newprev)

    *set the previous line*
- Line ∗ get_next ()

    *get the next line*

### Protected Attributes

- Line ∗ **_next**
- Line ∗ **_prev**
- string **_line**

### 4.15.1 Detailed Description

Abstract class representing an Line.

### 4.15.2 Member Function Documentation

#### 4.15.2.1 virtual string Line::to_string ( ) [pure virtual]

get the name string accessor of the type line

Implemented in Instruction, Directive, and Label.

The documentation for this class was generated from the following file:

- Line.h

## 4.16 Node_dfg Class Reference

class representing a node of data flow graph

```
#include <Node_dfg.h>
```

### Public Member Functions

- Node_dfg (Instruction ∗)

  *Constructor of Node_dfg.*
- ∼Node_dfg ()

  *Destructor of Node_dfg.*
- Arc_t ∗ get_arc (int i)

  *get the ith arc of the arc list*
- void **remove_arc** (int index)
- void **remove_pred** (int index)
- list< Arc_t ∗ >::iterator **arcs_begin** ()
- list< Arc_t ∗ >::iterator **arcs_end** ()
- int get_nb_arcs ()

  *get the number of arcs*
- Instruction ∗ get_instruction ()

  *get the Instruction*
- void add_successeur (Arc_t ∗)

  *add an arc to the arc list*
- void add_predecesseur (Node_dfg ∗)

  *add a predecessor to the predecessor list*
- int nb_preds ()

  *get the number of predecessors*
- list< Node_dfg ∗ >::iterator **pred_begin** ()
- list< Node_dfg ∗ >::iterator **pred_end** ()
- void set_instruction (Instruction ∗)

  *set the Instruction*
- int **compute_weight** ()
- void set_weight (int)

  *set the weight*
- int get_weight ()

  *get the weight*
- int **compute_nb_descendant** (int nb_instr, int ∗deja_comptes)
- void set_nb_descendant (int)

  *set the number of descendant*
- int get_nb_descendant ()

  *get the number of descendant*
- void **set_tready** (int t)
- int **get_tready** ()

### 4.16.1 Detailed Description

class representing a node of data flow graph

The documentation for this class was generated from the following file:

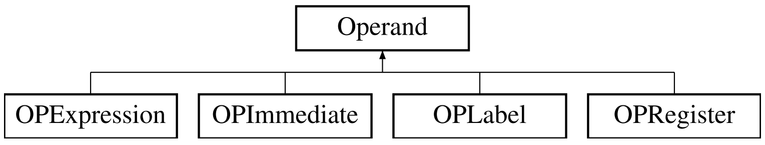
- Node_dfg.h

## 4.17 Operand Class Reference

Abstract class representing an operand.

`#include <Operand.h>`

Inheritance diagram for Operand:



### Public Member Functions

- virtual ~Operand ()

  *Virtual destructor.*
- virtual string get_op ()=0

  *Get the operand value virtual accessor of the operand.*
- virtual void set_op (string)=0

  *set the operand value virtual setter of the operand*
- virtual t_OpType get_op_type ()=0

  *get the operator type virtual accessor of accessor*
- virtual string to_string ()=0

  *virtual tostring*
- bool **isOPLabel** ()
- bool **isOPRegister** ()
- bool **isOPImmediate** ()

### Protected Attributes

- string **_oper**

### 4.17.1 Detailed Description

Abstract class representing an operand.

### 4.17.2 Member Function Documentation

#### 4.17.2.1 virtual t_OpType Operand::get_op_type ( ) [pure virtual]

get the operator type virtual accessor of accessor

**Returns**

return the Operand type as enum

Implemented in OPRegister, OPImmediate, OPExpression, and OPLabel.

#### 4.17.2.2 virtual string Operand::to_string ( ) [pure virtual]

virtual tostring

**Returns**

return the Object as string

Implemented in OPRegister, OPImmediate, OPExpression, and OPLabel.

The documentation for this class was generated from the following file:

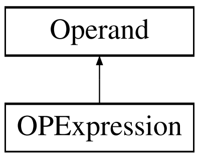
- Operand.h

## 4.18 OPExpression Class Reference

class representing an expression herited by Operand

```
#include <OPExpression.h>
```

Inheritance diagram for OPExpression:



### Public Member Functions

- OPExpression (string)

  *Constructor of the Expression class.*
- virtual ∼OPExpression ()

  *Destructor of the Expression class.*
- virtual string get_op ()

  *Get the operand value.*
- virtual t_OpType get_op_type ()

  *get the operator type*
- virtual string to_string ()

  *tostring*
- virtual void set_op (string)

  *set the operand value setter of the operand*

### Additional Inherited Members

### 4.18.1 Detailed Description

class representing an expression herited by Operand

### 4.18.2 Member Function Documentation

#### 4.18.2.1 virtual string OPExpression::get_op ( ) [virtual]

Get the operand value.

**Returns**

return the string of the Expression

Implements Operand.

#### 4.18.2.2 virtual t_OpType OPExpression::get_op_type ( ) [virtual]

get the operator type

**Returns**

return the Operand type as enum

Implements Operand.

#### 4.18.2.3 virtual string OPExpression::to_string ( ) [virtual]

tostring

**Returns**

return the Object as string

Implements Operand.

The documentation for this class was generated from the following file:

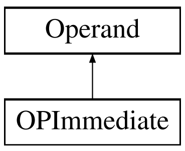
- OPExpression.h

## 4.19 OPImmediate Class Reference

class representing an Immediate herited by Operand

`#include <OPImmediate.h>`

Inheritance diagram for OPImmediate:



### Public Member Functions

- OPImmediate (string)

  *Constructor of the Immediate Class.*
- OPImmediate (int)

*Constructor of the Immediate Class.*
- virtual ∼OPImmediate ()

  *Destructor of the Immediate Class.*
- virtual string get_op ()

  *Get the string of the operand.*
- virtual t_OpType get_op_type ()

  *get the operator type*
- virtual string to_string ()

  *tostring*
- virtual void set_op (string)

  *set the string of the operand setter of the operand*

## Additional Inherited Members

### 4.19.1 Detailed Description

class representing an Immediate herited by Operand

### 4.19.2 Member Function Documentation

#### 4.19.2.1 virtual string OPImmediate::get_op ( ) [virtual]

Get the string of the operand.

**Returns**

return the string of the Immediate

Implements Operand.

#### 4.19.2.2 virtual t_OpType OPImmediate::get_op_type ( ) [virtual]

get the operator type

**Returns**

return the Operand type as enum

Implements Operand.

#### 4.19.2.3 virtual string OPImmediate::to_string ( ) [virtual]

tostring

**Returns**

return the name of the Object as string

Implements Operand.

The documentation for this class was generated from the following file:

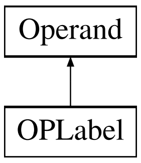
- OPImmediate.h

## 4.20 OPLabel Class Reference

class representing a Label herited by Operand

`#include <OPLabel.h>`

Inheritance diagram for OPLabel:



### Public Member Functions

- OPLabel (string)

  *Constructor of the Label Class.*
- virtual ∼OPLabel ()

  *Destructor of the Label Class.*
- virtual string get_op ()

  *Get the string of the operand accessor of the operand.*
- virtual t_OpType get_op_type ()

  *get the operator type*
- virtual string to_string ()

  *tostring*
- virtual void set_op (string)

  *set the operand value setter of the operand*

### Additional Inherited Members

### 4.20.1 Detailed Description

class representing a Label herited by Operand

### 4.20.2 Member Function Documentation

#### 4.20.2.1 virtual t_OpType OPLabel::get_op_type ( ) `[virtual]`

get the operator type

**Returns**

return the Operand type as enum

Implements Operand.

#### 4.20.2.2 virtual string OPLabel::to_string ( ) `[virtual]`

tostring

**Returns**

return the name of the Object as string

Implements Operand.

The documentation for this class was generated from the following file:

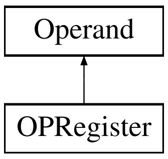
- OPLabel.h

## 4.21 OPRegister Class Reference

class representing a Register herited by Operand

```
#include <OPRegister.h>
```

Inheritance diagram for OPRegister:



### Public Member Functions

- OPRegister (string, t_Src_Dst)

  *Constructor of the Register class.*
- OPRegister (string, int, t_Src_Dst)

  *Constructor of the Register class.*
- **OPRegister** (int, t_Src_Dst)
- virtual ∼OPRegister ()

  *Destructor of the Register class.*
- int get_reg ()

  *Get the Register value.*
- void set_reg (int)

  *set the Register value setter of the Register*
- virtual string get_op ()

  *Get the operand value.*
- virtual t_OpType get_op_type ()

  *get the operator type*
- virtual string to_string ()

  *tostring*
- virtual void set_op (string)

  *set the operand value setter of the operand*
- void set_type (t_Src_Dst)

  *set the type of the register setter of the register type*
- t_Src_Dst get_type ()

  *get the type of the register getter of the register type*

### Additional Inherited Members

### 4.21.1 Detailed Description

class representing a Register herited by Operand

### 4.21.2 Member Function Documentation

#### 4.21.2.1 virtual string OPRegister::get_op ( ) `[virtual]`

Get the operand value.

**Returns**

return the string of the register

Implements Operand.

#### 4.21.2.2 virtual t_OpType OPRegister::get_op_type ( ) `[virtual]`

get the operator type

**Returns**

return the Operand type as enum

Implements Operand.

#### 4.21.2.3 int OPRegister::get_reg ( )

Get the Register value.

**Returns**

return the number of the Register

#### 4.21.2.4 virtual string OPRegister::to_string ( ) `[virtual]`

tostring

**Returns**

return the Object as string

Implements Operand.

The documentation for this class was generated from the following file:

- OPRegister.h

## 4.22 Program Class Reference

class representing a program as list

```
#include <Program.h>
```

### Public Member Functions

- Program ()
  *Empty constructor of a program.*

- Program (Program const &otherprogram)

  *Copy constructor of a program.*
- Program (string const file)

  *Constructor with the input file of program.*
- ∼Program ()

  *Destructor of program.*
- void add_line (Line ∗newline)

  *Add a line at the end of the program.*
- int add_line_at (Line ∗newline, int position)

  *Add a line to the program with position as index.*
- void exchange_line (int line1, int line2)

  *Reverse two lines which are at the index line1 and line2.*
- void display ()

  *display the program*
- void del_line (int index)

  *Delete the line at the given index in the program.*
- Line ∗ find_line (int index)

  *gives the line that corresponds to the index*
- int size ()

  *get the length of the program*
- void in_file (string const filename)

  *returns the dependance betwen the two given instructions*
- bool is_empty ()

  *return true if the program is Empty*
- void comput_function ()

  *calculate the functions of the program*
- int nbr_func ()

  *get the number of functions in the program*
- Function ∗ get_function (int index)

  *returns the function of index index in the list _myfunc*
- list< Function ∗ >::iterator **function_list_begin** ()
- list< Function ∗ >::iterator **function_list_end** ()
- void flush ()

  *empty the program*
- void comput_CFG ()

  *calculate the CFG associated with each function of the program*
- Cfg ∗ get_CFG (int index)

  *returns the CFG of index index in the list _myCFG*

## 4.22.1 Detailed Description

class representing a program as list

## 4.22.2 Member Function Documentation

### 4.22.2.1 void Program::in_file ( string const *filename* )

returns the dependance betwen the two given instructions

**Returns**

returns the dependance in the enum formatwrite the programme into a file

The documentation for this class was generated from the following file:

- Program.h

## 4.23 s_Profile Struct Reference

Structure allowing to add caracteristics to an operator.

```
#include <Enum_type.h>
```

### Public Attributes

- t_Operator **op**
- std::string **nom**
- t_Format **format**
- t_Inst **type**
- int **nb_oper**

### 4.23.1 Detailed Description

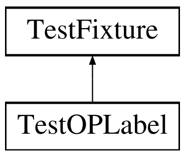
Structure allowing to add caracteristics to an operator.

The documentation for this struct was generated from the following file:

- Enum_type.h

## 4.24 TestOPLabel Class Reference

Inheritance diagram for TestOPLabel:



### Public Member Functions

- void **setUp** (void)
- void **tearDown** (void)

The documentation for this class was generated from the following file:

- TestOPLabel.h

## 4.25 utchn Struct Reference

### Public Attributes

- struct utchn ∗ **NEXT**
- union utdat **DATA**

The documentation for this struct was generated from the following file:

- utl200.h

## 4.26 utdat Union Reference

### Public Attributes

- void ∗ **VPNT**
- float **FLOT**
- unsigned int **UINT**
- int **SINT**
- char **CHAR**
- unsigned char **UCHR**

The documentation for this union was generated from the following file:

- utl200.h

## 4.27 utdic Struct Reference

### Public Attributes

- struct utdic ∗ **NEXT**
- struct utdit ∗ **TABLE**
- void ∗(∗ **ADD_K** )()
- void(∗ **FRE_K** )()
- int(∗ **CMP_K** )()
- void ∗(∗ **ADD_D** )()
- void(∗ **FRE_D** )()
- unsigned int(∗ **HSH_K** )()
- unsigned short **SIZE**
- unsigned short **SPEED**
- unsigned int **INIT**
- unsigned int **STATUS**
- unsigned int **FLAG**

The documentation for this struct was generated from the following file:

- utl200.h

## 4.28 utdit Struct Reference

### Public Attributes

- struct uttyp ∗ **ITEM**

The documentation for this struct was generated from the following file:

- utl200.h

## 4.29 uttdc Struct Reference

### Public Attributes

- struct uttdc ∗ **NEXT**
- union utdat **DAT1**
- union utdat **DAT2**
- union utdat **DAT3**

The documentation for this struct was generated from the following file:

- utl200.h

## 4.30 uttpd Struct Reference

### Public Attributes

- struct uttpd ∗ **NEXT**
- union utdat **DAT1**
- double **DAT2**

The documentation for this struct was generated from the following file:

- utl200.h

## 4.31 uttyp Struct Reference

### Public Attributes

- struct uttyp ∗ **NEXT**
- union utdat **DAT1**
- union utdat **DAT2**

The documentation for this struct was generated from the following file:

- utl200.h

## 4.32 YYSTYPE Union Reference

### Public Attributes

- struct utchn ∗ **pchn**
- unsigned int **uval**
- char ∗ **text**

The documentation for this union was generated from the following file:

- asm_mipsyac.h

# Chapter 5

# File Documentation

## 5.1 Basic_block.h File Reference

Basic_block class.

```
#include <Line.h>
#include <Instruction.h>
#include <string>
#include <stdio.h>
#include <Enum_type.h>
#include <fstream>
#include <vector>
#include <list>
#include <Dfg.h>
#include <Node_dfg.h>
```

### Classes

- class Basic_block

  *class representing a Basic_block of a fonction*

### 5.1.1 Detailed Description

Basic_block class.

**Author**

Hajjem

## 5.2 Cfg.h File Reference

Cfg class.

```
#include <Basic_block.h>
#include <string>
#include <stdio.h>
#include <Label.h>
#include <Enum_type.h>
#include <list>
#include <fstream>
```

### Classes

- class Cfg

  *class representing control flow graph*

### 5.2.1 Detailed Description

Cfg class.

**Author**

Hajjem

## 5.3 Dfg.h File Reference

Dfg class.

```
#include <Node_dfg.h>
#include <Instruction.h>
#include <Enum_type.h>
#include <fstream>
#include <list>
#include <boost/graph/adjacency_list.hpp>
#include <boost/graph/astar_search.hpp>
```

### Classes

- class Dfg

  *class representing a Dfg of a Basic block, a data flow graph that is to be used to calculate the critical path and schedule code*

### 5.3.1 Detailed Description

Dfg class.

## 5.4 Directive.h File Reference

Directive class.

```
#include <iostream>
#include <string>
#include <Enum_type.h>
#include <Line.h>
```

### Classes

- class Directive

  *class representing an Directive herited by Line*

### Functions

- Directive ∗ getDirective (Line ∗l)

  *returns the Directive associated to the line, if the line is a directive, NULL otherwise*

### 5.4.1 Detailed Description

Directive class.

**Author**

Hajjem

## 5.5 Function.h File Reference

Function class.

```
#include <Line.h>
#include <Basic_block.h>
#include <Instruction.h>
#include <string>
#include <stdio.h>
#include <Label.h>
#include <Enum_type.h>
#include <list>
#include <Cfg.h>
#include <fstream>
```

### Classes

- class Function

  *class representing a Function on a program*

### 5.5.1 Detailed Description

Function class.

**Author**

Hajjem

## 5.6 Instruction.h File Reference

Instruction class.

```
#include <Operand.h>
#include <string>
#include <OPExpression.h>
#include <OPImmediate.h>
#include <OPLabel.h>
#include <Line.h>
#include <OPRegister.h>
#include <Enum_type.h>
#include <list>
```

### Classes

- struct dep
- class Instruction

    *class representing an instruction which herited by Line*

### Functions

- Instruction ∗ getInst (Line ∗l)

    *returns the instruction associated to the line, if the line is an instruction, NULL otherwise*
- int delai (t_Inst t1, t_Inst t2)

    *retourne le délai induit par une dépendance RAW i1 -> i2 avec i1 de type t1 et i2 de type t2*

### 5.6.1 Detailed Description

Instruction class.

### 5.6.2 Function Documentation

#### 5.6.2.1 int delai ( t_Inst *t1*, t_Inst *t2* )

retourne le délai induit par une dépendance RAW i1 -> i2 avec i1 de type t1 et i2 de type t2

## 5.7 Label.h File Reference

Label class.

```
#include <iostream>
#include <string>
#include <Enum_type.h>
#include <Line.h>
```

### Classes

- class Label

    *class representing an Label herited by Line*

### Functions

- Label ∗ getLabel (Line ∗l)

    *returns the Label associated to the line if the line is a label, NULL otherwise*

### 5.7.1 Detailed Description

Label class.

**Author**

Hajjem

## 5.8 Line.h File Reference

Line class.

```
#include <iostream>
#include <string>
#include <Enum_type.h>
```

### Classes

- class Line

  *Abstract class representing an Line.*

### 5.8.1 Detailed Description

Line class.

## 5.9 Node_dfg.h File Reference

Node_dfg class.

```
#include <Basic_block.h>
#include <string>
#include <stdio.h>
#include <Label.h>
#include <Enum_type.h>
```

### Classes

- struct Arc_t
- class Node_dfg

  *class representing a node of data flow graph*

### 5.9.1 Detailed Description

Node_dfg class.

## 5.10 Operand.h File Reference

Operand class.

```
#include <iostream>
#include <string>
#include <Enum_type.h>
```

### Classes

- class Operand

  *Abstract class representing an operand.*

### 5.10.1 Detailed Description

Operand class.

**Author**

Hajjem

## 5.11 OPExpression.h File Reference

OPExpression class.

```
#include <iostream>
#include <string>
#include <Operand.h>
#include <Enum_type.h>
```

### Classes

- class OPExpression

  *class representing an expression herited by Operand*

### 5.11.1 Detailed Description

OPExpression class.

**Author**

Hajjem

## 5.12 OPImmediate.h File Reference

OPImmediate class.

```
#include <iostream>
#include <string>
#include <Operand.h>
#include <Enum_type.h>
```

### Classes

- class OPImmediate

  *class representing an Immediate herited by Operand*

### 5.12.1 Detailed Description

OPImmediate class.

**Author**

Hajjem

## 5.13 OPLabel.h File Reference

OPLabel class.

```
#include <iostream>
#include <Operand.h>
#include <Enum_type.h>
#include <string>
```

### Classes

- class OPLabel

  *class representing a Label herited by Operand*

### Functions

- OPLabel ∗ getOPLabel (Operand ∗)

  *returns the OPLabel associated to the Operand if it is an OPLabel, otherwise returns NULL*

### 5.13.1 Detailed Description

OPLabel class.

**Author**

Hajjem

## 5.14 OPRegister.h File Reference

OPRegister class.

```
#include <iostream>
#include <string>
#include <Operand.h>
#include <Enum_type.h>
```

### Classes

- class OPRegister

  *class representing a Register herited by Operand*

### Functions

- OPRegister ∗ getOPRegister (Operand ∗)

  *returns the OPRegister associated to the Operand if it is an OPRegister, otherwise returns NULL*

### 5.14.1 Detailed Description

OPRegister class.

**Author**

Hajjem

## 5.15 Program.h File Reference

Program class.

```
#include <Line.h>
#include <Function.h>
#include <Basic_block.h>
#include <Instruction.h>
#include <Directive.h>
#include <Cfg.h>
#include <string>
#include <stdio.h>
#include <Enum_type.h>
#include <fstream>
#include <list>
```

### Classes

- class Program

  *class representing a program as list*

### 5.15.1 Detailed Description

Program class.

**Author**

Hajjem