

# Results from the DM18 Competition

IMADA

May, 2007

## Public Programs

Program	Group					
	1	2	3	4	5	6
AbsTest					–	
ArrayIndex					–	
Assoc					–	
ErrOutOfBounds1		$R_S$			–	$R_E$
ErrOutOfBounds2		$R_S$			–	$R_E$
Factorial					–	
Function					–	
IfThen					–	
Knapsack		$R_T$		$C_E$	–	$C_E$
LoopBreak <sup>1</sup>					–	
SimpleRecord					–	
StaticLink				$C_E$	–	$C_E$

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<sup>1</sup>Published as WhileDo due to the laziness of the TA

## Other Programs

Program	Group					
	1	2	3	4	5	6
ArrayComparisonsA		$C_E$		$C_E$	–	$C_E$
ArrayComparisonsB		$R_S$		$C_E$	–	$C_E$
ArrayOfOwnType				$C_S$	–	$R_O$
BinarySearchTree		$C_E$		$C_E$	–	$C_E$
ErrAssignToType					–	
ErrBreakOutsideLoopA		$C_S$		$C_S$	–	$C_O$
ErrBreakOutsideLoopB		$C_S$		$C_S$	–	$C_O$
ErrContinueOutsideLoopA		$C_S$		$C_S$	–	$C_O$
ErrContinueOutsideLoopB		$C_S$		$C_S$	–	$C_O$
ErrFuncParamsInvalidType				$C_E$	–	
ErrFuncParamsTooFew					–	
ErrFuncParamsTooMany					–	
ErrInvalidToken					–	$C_E$
ErrRuntimeDiv0					–	$R_S$
ErrRuntimeNegArraySize					–	
ErrRuntimeNullPointer				$C_E$	–	$C_E$
ErrRuntimeOutOfMem		$C_E$		$R_T$	–	$R_S$
ErrTypeLoop		$R_O$			–	$C_S$
ErrUnmatchedBeginComment		$R_O$		$C_E$	–	$C_E$
FuncCallAsParamA					–	$C_E$
FuncCallAsParamB					–	$C_E$
FuncModifyingParams				$C_O$	–	$R_O$
FuncParamsEvalOrder		$R_O$		$R_O$	–	$C_E$
FuncRedefinedInItself		$C_E$			–	$R_O$
FuncRedefinedReturnType				$C_E$	–	
FuncRedefinedType				$R_O$	–	
FuncReturnRecord		$C_E$		$C_E$	–	
LargeExpTreeA		$R_O$			–	
LargeExpTreeB		$R_O$			–	
LargeExpTreeC		$R_O$			–	
LoopContinue				$R_S$	–	
MultiDimArray		$R_O$		$C_E$	–	$C_E$

MultipleTypecheckPassesA		$C_E$		$C_E$	–	$C_S$
MultipleTypecheckPassesB		$R_O$		$C_E$	–	$C_S$
MultipleTypecheckPassesC				$C_E$	–	$C_E$
RecordComparisonsA				$C_E$	–	$C_E$
RecordComparisonsB		$C_E$		$C_E$	–	$C_E$
Recursion				$R_S$	–	
ReturnInMainScope	$R_X^2$	$R_X^2$			–	$C_O$
ShortCircuitAND		$R_T$		$R_S$	–	$R_T$
ShortCircuitOR		$R_T$		$R_S$	–	$R_T$
StaticLinkA		$R_O$		$R_O$	–	
StaticLinkB		$C_E$		$C_E$	–	$C_E$
Compile-time problems	0	12	0	23	N/A	24
Run-time problems	0(+1)	15(+1)	0	8	N/A	9
Total problems (out of 55 tests)	0(+1)	27(+1)	0	31	N/A	33

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<sup>2</sup>Return value in code is ignored, 0 is returned.

## Legend

Compile-time problems:

$C_T$  : Compiler does not terminate.

$C_E$  : Compiler gives no or incorrect error when an error during compilation was expected, or compiler gives an error when no error during compilation was expected.

$C_S$  : Compiler gives Segmentation fault or Floating exception.

$C_O$  : The produced output cannot be assembled.

Run-time problems:

$R_T$  : The compiled program does not terminate.

$R_E$  : The compiled program gives no or incorrect runtime error when a runtime error was expected, or the compiled program gives a runtime error when no runtime error was expected.

$R_S$  : The compiled program gives Segmentation fault or Floating exception.

$R_O$  : The compiled program produces incorrect output.

$R_X$  : The compiled program behaves in an unexpected fashion.

# Time Trial on Knapsack

Compilation done using the -x switch.

Group	Time on arabella <sup>3</sup> (min:sec)	Time on TA's laptop <sup>4</sup> (min:sec)
1	00:51.64	01:02.10
2	-:-.-	-:-,-
3	<b>00:27.43</b>	00:48.34
4	-:-.-	-:-,-
5	-:-.-	-:-,-
6	-:-.-	-:-,-
gcc -O0	00:40.72	00:47.09
gcc -O1	00:31.56	<b>00:37.07</b>
gcc -O2	00:38.74	00:42.03
gcc -O3	00:27.97	00:39.93

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<sup>3</sup>Intel Pentium 4, 2.4 GHz, gcc version 4.0.3 (Ubuntu 4.0.3-1ubuntu5)

<sup>4</sup>AMD Turion64-X2, 1.6GHz, gcc version 3.4.4