A Simple Guarded Language

Cecilia Kilmurray[1]

Departamento de Computación, FCEFQyN, Universidad Nacional de Río Cuarto,
Río Cuarto, Córdoba, Argentina, {ckilmurray}@dc.exa.unrc.edu.ar

Abstract. This document describes the grammar of the Faulty Guarded Language

Keywords:

1 Introduction

In this document we present the grammar of the design language Faulty, used by the Faulty model checker.

2 Grammar

The language Faulty is a simple guarded language:

⟨*specification*⟩ ::= ⟨*channel_list*⟩ ' ; ' ⟨*process_list*⟩ ⟨*main_program*⟩ ';'

⟨*channel_list*⟩ ::= ⟨*chan_decl*⟩
| ⟨*channel_list*⟩ ';' ⟨*chan_decl*⟩

⟨*chan_decl*⟩ ::= CHANNEL ID'[' INT_CONST_']' OF ⟨*type*⟩

⟨*process_list*⟩ ::= ⟨*process*⟩
| ⟨*process_list*⟩ ';' ⟨*process*⟩

⟨*process*⟩ ::= PROCESS ID USES ⟨*vbles_decl*⟩ ' { ' ⟨*decl_list*⟩ ';'
⟨*initial_cond*⟩ ';' ⟨*norm_cond*⟩ ';' ⟨*branch_list*⟩ ';' '}'

⟨*initial_cond*⟩ ::= INIT ':' ⟨*expr*⟩

⟨*norm_cond*⟩ ::= NORMATIVE ':' ⟨*expr*⟩

⟨*decl_list*⟩ ::= ⟨*decl*⟩
| ⟨*decl_list*⟩ ‘`;`’ ⟨*decl*⟩

⟨*decl*⟩ ::= ⟨*vbles_decl*⟩ ‘`:`’ ⟨*type*⟩

⟨*vbles_decl*⟩ ::= ID
| ⟨*vbles_decl*⟩ ‘`,`’ ID

⟨*type*⟩ ::= INT | BOOL

⟨*branch_list*⟩ ::= ⟨*branch*⟩
| ⟨*branch_list*⟩ ‘`;`’ ⟨*branch*⟩

⟨*branch*⟩ ::= ⟨*expr*⟩ ‘`->`’ ⟨*assig_list*⟩

⟨*assig_list*⟩ ::= ⟨*assig*⟩
| ⟨*assig_list*⟩ ‘`,`’ ⟨*assig*⟩

⟨*assig*⟩ ::= ⟨*location*⟩ ‘`=`’ ⟨*expr*⟩

⟨*location*⟩ ::= ID | ID ‘`.`’ PUT ‘`(`’ expr ‘`)`’

⟨*expr*⟩ ::= ⟨*disjuntion*⟩

⟨*disjuntion*⟩ ::= ⟨*conjuntion*⟩
| ⟨*disjuntion*⟩ ‘`||`’ ⟨*conjuntion*⟩

⟨*conjuntion*⟩ ::= ⟨*comparation*⟩
| ⟨*conjuntion*⟩ ‘`&&`’ ⟨*comparation*⟩

⟨*comparation*⟩ ::= ⟨*relation*⟩
| ⟨*relation*⟩ ‘`==`’ ⟨*relation*⟩

⟨*relation*⟩ ::= ⟨*addition*⟩
| ⟨*addition*⟩ ‘`<`’ ⟨*addition*⟩
| ⟨*addition*⟩ ‘`>`’ ⟨*addition*⟩

⟨*addition*⟩ ::= ⟨*term*⟩
| ⟨*addition*⟩ '+' ⟨*term*⟩
| ⟨*addition*⟩ '-' ⟨*term*⟩

⟨*term*⟩ ::= ⟨*factor*⟩
| ⟨*term*⟩ '*' ⟨*factor*⟩
| ⟨*term*⟩ '/' ⟨*factor*⟩

⟨*factor*⟩ ::= ⟨*primary*⟩
| '!' ⟨*factor*⟩
| '-' ⟨*factor*⟩

⟨*primary*⟩ ::= INT_CONST
| TRUE
| FALSE
| ID
| '(' ⟨*expr*⟩ ')'

⟨*main_program*⟩ ::= MAIN '(' ')' '{' ⟨*body_main*⟩ '}'

⟨*body_main*⟩ ::= ⟨*process_decl*⟩ ⟨*process_inv*⟩ ';'

⟨*process_decl*⟩ ::= ⟨*proc*⟩
| ⟨*process_decl*⟩ ';' ⟨*proc*⟩

⟨*proc*⟩ ::= ⟨*vbles_decl*⟩ ':' ⟨*type_proc*⟩

⟨*type_proc*⟩ ::= ID

⟨*process_inv*⟩ ::= ⟨*inv*⟩
| ⟨*process_inv*⟩ ';' ⟨*inv*⟩

⟨*inv*⟩ ::= RUN ID'(' ')'