

# Milestone 3

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## 1 Conflicts

We are facing 4 reduce/reduce conflicts whose description are as follows. These generated using the -Wcex/-Wcounterexamples flag in bison ( bison -Wcex parse.y )

```
parse.y: warning: 4 reduce/reduce conflicts [-Wconflicts-rr]
```

Conflict 1

```
parse.y: warning: reduce/reduce conflict on token '.' [-Wcounterexamples]
```

Example: ID • '.' ID

First reduce derivation

PrimaryExpr

92: Operand

107: OperandName

119: QualifiedIdent

120: PackageName '.' ID

3: ID •

Second reduce derivation

PrimaryExpr

94: PrimaryExpr

Selector

92: Operand

96: '.' ID

107: OperandName

118: ID •

Conflict 2

```
parse.y: warning: reduce/reduce conflict on token '{' [-Wcounterexamples]
```

Productions leading up to the conflict state found.

First example: '{' '}' '}'

First reduce derivation

IfStmt

166: '{' STAR\_Statement\_SC Block

142:

142: '}' '}'

Second example: ID • '{' '}' Block

Second reduce derivation

IfStmt

166: Expression

Block

51: UnaryExpr

53: PrimaryExpr

92: Operand

106: Literal

110: CompositeLit

```

121: LiteralType      LiteralValue
125: TypeName        126: '{' '}'
197: ID •

```

#### Conflict 3

parse.y: warning: reduce/reduce conflict on token '{' [-Wcounterexamples]

Productions leading up to the conflict state found.

First example: '{' '}' '}'

First reduce derivation

```

IfStmt
166: '{' STAR_Statement_SC Block
142:      142: '}' '}'

```

Second example: QualifiedIdent • '{' '}' Block

Second reduce derivation

```

IfStmt
166: Expression                                     Block
51: UnaryExpr
53: PrimaryExpr
92: Operand
106: Literal
110: CompositeLit
121: LiteralType      LiteralValue
125: TypeName        126: '{' '}'
198: QualifiedIdent •

```

#### Conflict 4

parse.y: warning: reduce/reduce conflict on token '.' [-Wcounterexamples]

Example: ID • '.' ID

First reduce derivation

```

PrimaryExpr
92: Operand
107: OperandName
119: QualifiedIdent
120: PackageName '.' ID
3: ID •

```

Second reduce derivation

```

PrimaryExpr
94: PrimaryExpr      Selector
92: Operand          96: '.' ID
107: OperandName
118: ID •

```

### 1.1 Conflict 1 and 4

- The first and fourth conflicts are related to Qualified Identifier. To use the functionalities of packages we use a specific format for eg Math.sin(). So, here Math is qualified identifier.
- However we would be using the '.' for in the primary expressions like accessing the struct.
- So our parser is unable to determine whether the token after '.' is qualified identifier or selector

### 1.2 Conflict 2 and 3

- We are not able to figure out the derivation of the counterexample shown by bison in theses conflicts. It seems unclear. We are still in the process of locating the inconsistency in the grammar that is causing this conflict.

## 2 Git show output

Author: gagan-aryan <gagan@iitk.ac.in>

Date: Fri Feb 18 23:42:02 2022 +0530

update: milestone 3

```
diff --git a/src/automata.png b/docs/automata.png
similarity index 59%
rename from src/automata.png
rename to docs/automata.png
index 10bac47..76f1dcb 100644
Binary files a/src/automata.png and b/docs/automata.png differ
diff --git a/src/Makefile b/src/Makefile
index fae1f17..3d55b3f 100644
--- a/src/Makefile
:....skipping...
commit 4fec95c3002230a1b4aa3a3c229b002058be43ee (HEAD -> abhay, tag: parser)
Author: gagan-aryan <gagan@iitk.ac.in>
Date: Fri Feb 18 23:42:02 2022 +0530
```

update: milestone 3

```
diff --git a/src/automata.png b/docs/automata.png
similarity index 59%
rename from src/automata.png
rename to docs/automata.png
index 10bac47..76f1dcb 100644
Binary files a/src/automata.png and b/docs/automata.png differ
diff --git a/src/Makefile b/src/Makefile
index fae1f17..3d55b3f 100644
--- a/src/Makefile
+++ b/src/Makefile
@@ -1,13 +1,13 @@

all:
-    bison -d -v -Wconflicts-sr parse.y
+    bison -d -v parse.y
+    bison --graph parse.y
+    python3 label.py
+    sfdp -x -Goverlap=scale -Tpng new_parse.gv > automata.png
-    flex lex.l
+    flex lex.l
+    gcc -c -lfl parse.tab.c
+    gcc -c -lfl lex.yy.c
-    gcc parse.tab.o lex.yy.o -o parse
+    gcc parse.tab.o lex.yy.o -o parse.o
+    rm -rf parse.gv

clean:
diff --git a/src/label.py b/src/label.py
index 9e763bb..d8f48d3 100644
--- a/src/label.py
+++ b/src/label.py
@@ -5,6 +5,6 @@ file2 = open('new_parse.gv', 'x')
```

```
lines = file1.readlines()
```