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.