Homework #6
Code Generation

Consider the following algorithm which puts out code using only one register.

```
Procedure CodeGen (Node)
{
 Case Node Type is:
1. Expression Operator, Op:
IF neither child is a leaf THEN  /* Result left in Reg  */
{ CodeGen(LeftChild)
   Emit "Store    Reg, T1  ( = GetTemp)"
   CodeGen (RightChild)
   Emit  "Store    Reg, T2 ( = GetTemp)"
     Emit  "Load    Temp1, Reg
     Emit  "Op    T2, Reg"
 }
 ELSE  IF only one child is a leaf THEN
 {
   CodeGen(Other Child)
   Emit "Op  LeafChild, Reg"
 }
 ELSE  /*  Both children are leaves  */
    Emit  "Load    Left Child, Reg
     Emit  "Op    Right Child , Reg"
2.  ":=":
     CodeGen (Right Child)
    Emit  "Store    Reg, @LeftChild"
3. IF:



4. WHILE:
```

where @ means “address of”

a) (3 points) Create an AST for *a = 2 + 3 * 4* and use the algorithm to generate code. Show all your steps

AST

Algorithm Steps

Code:

b) (2 points) Add the code that would generate code for IF and WHILE
See above.