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CS323 Programming Assignments

1. Names [1. Omar Al Nabulsi]

2. Assignment Number [3]

3. Due Dates **Softcopy** [12/10], **Hardcopy** [12/11]

4. Turn-In Dates **Softcopy** [12/10], **Hardcopy** [12/11]

5. Executable FileName [executable]

(A file that can be executed without compilation by the instructor)

6. LabRoom [CS-101]

(Execute your program in a lab in the CS building before submission)

7. Operating System [Linux]

To be filled out by the Instructor:

GRADE:

COMMENTS:

CS323 Documentation

1. Problem Statement:

To write a semantic analyzer and assembly instructor. The syntax analyzer will be created using 29 syntax function rules given from project one and two. The assignment will consist of a symbol table handling and generate assembly code for the simplified version of Rat19F.

2. How to use the program in Linux:

- Place execute.sh file on Desktop along with test case files for ease of use.
- Open terminal
- Type the following command:
 - sh execute.sh
 - Type "testcase" or "testcase1" or "testcase2" when asked
 - Open output file to view further details such as lexeme, symbol table and instruction table

3. Design of the program:

- Semantics considering that "true" has an integer value of 1 and "false" has an integer value of 0, no arithmetic operations allowed.
- Symbol handling, each entry in the symbol holds a lexeme and memory address where identifier is placed within symbol table.
- Check to see if the identifier is already in the table, print out all identifiers in the table.
- Generating assembly code, add code to parser that will produce assembly code instructions kept in an array. Content is then printed out to produce listing of assembly code.

4. Limitations:

- Test case must be completely free of syntax errors to run
- Do not enter the character "%" in test case, the program will not run

5. Shortcomings:

- None

Test case 1:

```
int x,max,total;  
x=1;  
total=0;  
while (x<max) {  
    total=total+x;  
}
```

Test case 2:

```
int x, y, z, sum;  
x=1;  
y=2;  
z=3;  
sum=x+y+z;
```

Test case 3:

```
/*comment*]  
int i, max, sum;  
sum=0;  
i=1;  
get(max);  
while(i<max){  
    sum=sum+i;  
    i=i+1;  
}  
put(sum+max);
```