CS202
Assignment 1
Submission due – 20/02/2019 11:55 PM on Moodle

INSTRUCTIONS TO SUBMIT CODE
1.Save the code and readme in a ZIP file with the names YourRollNumber.zip
C file should also be of the format Code_ YourRollNumber.c
If the filename nomenclature is not followed, the respective program will not be evaluated.
2. On Moodle upload the material as a single zip file.
3. Create Readme file which contains instructions how to run the program.
4. Report which elaborates the logic of code for the questions.
5. No plagiarism
6. No extension will be granted.

We need to create a program in C which checks whether certain ***coding conventions*** have been adhered to in a given source code file as explained below. The lexical analysis of the input C code should be performed by a program generated via lex tool. For this you need to write a suitable specification (definitions, rules etc.) file which will be input to lex tool for generating the lexical analyser.

Coding conventions checks to be performed by lexical analyser:
Assume that input source code is written in C. Coding conventions to be checked are the following:

1. Variable names should be all in lowercase, alphanumeric strings starting with non-numeric character.
2. Function names should be all in lowercase and cannot contain numbers. Underscores are allowed.
3. All declarations of variables and functions should be documented with comments that precede the declaration. A comment starts with a slash asterisk /* and ends with a asterisk slash */.

Your program should take path of the source file to be checked as input (via command-line argument to the program). Output of the program should be one of the following:

1. If all the coding conventions have been followed in the input source file then your program should simply print the message:

   ```
   Program meets the coding conventions!
   ```

2. If there are instances in the input source file where coding conventions have not been followed then your program should print the line number and the text of the line where the violation has been detected.

You need to submit the following artifacts:

1. Readme file explaining how the program work, how to build and run it etc.
2. Well documented C source code that you write. DO NOT edit the code generated by the lex tool.
3. Well documented specification file to be used as input to lex tool.

Example input and expected output:

No error case

Input:

```
#include<stdio.h>
/* Checks the weight range. */
char check_range(float wt2, float min, float max) {
     if (wt2 > max || wt2 < min) return ‘F’;
     else return ‘T’;
}

/* This is the driver function. */
int main() {
     /* Max and min weight of the consignment in kg. */
     float max=100, min=10;
     /* Checks the range. */
     printf(“Wt is in range: %c”, check_range(67, min, max));
}
```

Output:

```
Program meets the coding conventions!
```

Error case

Input:

```
1.  #include<stdio.h>
2.  char WT_CHK(float wt2, float min, float max) {
3.    if (wt2 > max || wt2 < min) return ‘F’;
4.    else return ‘T’;
5.  }
6.
7.  /* This is the driver function. */
8.  int main() {
9.    float max=100, min=10;
10.   /* Checks the range. */
11.   printf(“Wt is in range: %c”, WT_CHK(67, min, max));
12. }
```

Output:

Coding conventions violated at:
Line 2: Function name should be lowercase.
Line 2: Function declarations should be documented.
Line 9: Variable declarations should be documented.