**Course: Programming Fundamentals (CS103)**

**Assignment 1**

**Question: 1**

**Name: Ibrahim Khan**

**Reg Num: SP24-BCS-160**

**syntax and semantics in programming**

**Syntax error:**

So, when programming we deal with so many types of error day to day when we code.

'While talking about C is case sensitive language even a capital will give your error if it is not declared etc. In c we have you follow a proper syntax to write code. If we violate that syntax, we will get an error which is called syntax error. Like if we miss a single semicolon (;) we will get an error or use a variable which is not declared any error that occur due to violation of c syntax or how C code is written is called syntax error

**For example,**

Using loops for (int i = 1; i <= 5, i++ )

In the above example we have used Comma (,) instead of Semicolon (;) which is syntax error and program will not get executed.

**Semantics:**

When can take semantics as an error that is due to an logic or thinking of programmer. Sometimes we write code and there are no syntax errors, but we don’t get desired output. This is due to our thinking and errors due to the thinking of a programmer is called Semantic error.

It’s important to understand both error types error because when your code is not correct syntax wise it will give you error but in case of Semantics it will not give you desired output. Although you have written it correctly syntax wise but did mistake logically.

When we write code which is syntax wise is correct it will get executed and if it doesn’t give desired output, it means that it is logically incorrect.

**For example:**

#include <stdio.h>

int main(void) {

    int number;

    printf("Enter a number to check its even or odd");

    scanf("%d", number);

    if (number/2!=0) {

        printf("Your Number is even");

    } else{

        printf("Your number is odd");

    }

    return 0;

}

The above code is correct Syntax wise but it is incorrect logically because if Number % 2 == 0 its even number.