Exercise 1: Defining constants

1. Launch the terminal
2. Create a new directory with the name "Lab02" inside "CSC215"
3. Write the program "ex1.c" that:
    a. uses `#define` preprocessor to define a character constant that contains the horizontal tab character
    b. uses `const` keyword to define a string that contains CSC and an integer that contains 215
    c. prints CSC, then the horizontal tab, then 215, all using the above mentioned constants.
4. Compile and run your program. 1 point

Exercise 2: Evaluating expressions

1. Write the program "ex2.c" that:
    a. declares three integer variables: a, b and c.
    b. initialize them to a = 1, b = 10, c = 0.
    c. prints the following output lines using the printf function:

```
<a> <b> <c>
<a>++ + <b> = <a++ + b>
++<a> + <b> = <++a + b>
<a> && <c> = <a && b>
<a> || <c> = <a || b>
<a> & 2 = <a & 2>
<a> | 0 = <a | 0>
<a> << 2 = <a << 2>
<a> >> 1 = <a >> 1>
```

    Note: `<expression>` here means value of `expression`.
    For example, to achieve the first line use the statement: `printf("%d %d %d\n", a, b, c);`
2. Compile and run your program. 1 point

Exercise 3: Reading, processing and displaying Results

1. Write the program "ex3.c" that:
    a. declares a constant π = 3.14
    b. reads the radius and the color of a circle
    c. calculates the area of this circle
    d. prints the color and the area in the format shown in the sample run.

```
Enter the circle radius > 12
Enter the circle color > Red
The Red circle area = 452.16
```

    Note: The circle area formula is: $\pi \times r^2$, where r is the radius of the circle
2. Compile and run the program. 1 point
3. The header file `math.h` defines the constant `M_PI`. Modify your program to calculate the area using this constant.
4. Recompile and run your program and note the difference from the previous output. 1 point

Exercise 4: Formatting outputs using printf

1. Write the program "ex4.c" that prints the following values in the indicated formats:

22/7	as a float number
22/7	as a float with 10 decimal digits
22/7	as a float of length 20 with 10 decimal digits
22/7	as a float of length 20 with 10 decimal digits and leading 0s
22/7	as a float with 10 decimal digits and display the sign
22/7	as a float with 10 decimal digits as a percentage
22/7	as a float in the scientific notation
31567	in the hexadecimal system
"Good morning"	the first 4 characters of the string
"Good morning"	the first 4 characters of the string reserving a length of 10

Lab assignment: 5 points

Write a C program assignment.c that prints the powers of the integers variables a = 1, b = 2 and c = 3 in a tabular format as below:

Expected output:

```
::::: Powers Table :::::
Number      Square      Cube        4th power
1           1           1           1
2           4           8           16
3           9           27          81
```

Note: Attach your five programs ex1.c, ex2.c, ex3.c, ex4.c and assignment.c to an email message with Lab02 in the subject field and send it to ppathak@ksu.edu.sa