COMP1511 18s2

Week-02 Tutorial Exercises

1. What is a directory?

2. What is the syntax of C `if` statements? What is the role of `if` statements in programs?

3. Use De Morgan's law on the following expressions in C and write down their equivalent expressions.
   Assume that A, B and C are boolean values (0 or 1) and x and y are int values.
   - `!( A && B && C )`
   - `!( A || B || C )`
   - `!( (x > 40) || (y == 20) )`
   - `!( (x < 0) || (x > 100) )`
   - `!( (x < 0) && (x > 50) )`

4. Write a program `pass_fail.c` that reads in an integer and prints out "PASS" if the integer is between 50 and 100 inclusive and fail if it is between 49 and 0, inclusive. It should print out ERROR if the number is less than 0, more than 100, or if the user does not enter a number. For example:

```
$ ./pass_fail
Please enter your mark: 42
FAIL
$ ./pass_fail
Please enter your mark: 50
PASS
$ ./pass_fail
Please enter your mark: 256
ERROR
```

5. Write a program `rectangle_area.c` that reads in 2 integers which are the side-length of a rectangle, and then prints the area of the rectangle.
   For example:

```
$ ./rectangle_area
Please enter rectangle length: 3
Please enter rectangle width: 5
Area = 15
$ ./rectangle_area
Please enter rectangle length: 42
Please enter rectangle width: 42
Area = 1764
```

6. Write a program that reads in an integer and determines if it is even or not. If the number is negative, print "NEGATIVE" instead.
   For example:

```
$ ./even_or_odd
Please enter a number: 42
EVEN
$ ./even_or_odd
Please enter a number: 111
ODD
$ ./even_or_odd
Please enter a number: -2
NEGATIVE
```

7. Write a program that converts from degree Fahrenheit to degree Celsius. To convert from degree Fahrenheit to degree Celsius, you must first substract 32, then multiply by 5/9.

```
Celsius = (Fahrenheit - 32) * 5 / 9
```

8. Write a program that checks whether a triangle is valid or not. We say a triangle is valid if and only if sum of its angles is 180 degree. Also each angle must be greater than zero.

```
$ ./check_triangle
Please enter three angles of triangle (space separated):
70 50 20
Triangle is invalid.

$ ./check_triangle
Please enter three angles of triangle (space separated):
70 50 60
Triangle is valid.

$ ./check_triangle
Please enter three angles of triangle (space separated):
30 0 150
Triangle is invalid.
```