세계 속의 빛
광주과학기술원

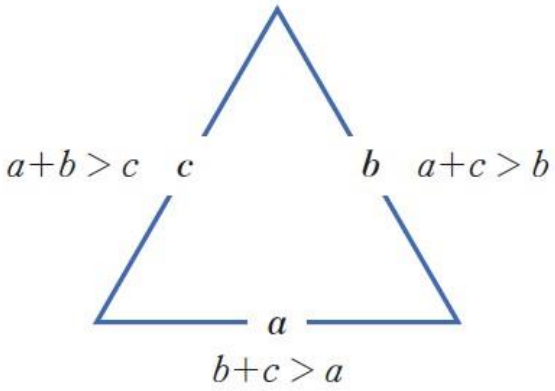
Computer Programming

Quiz1

Apr. 13, 2022

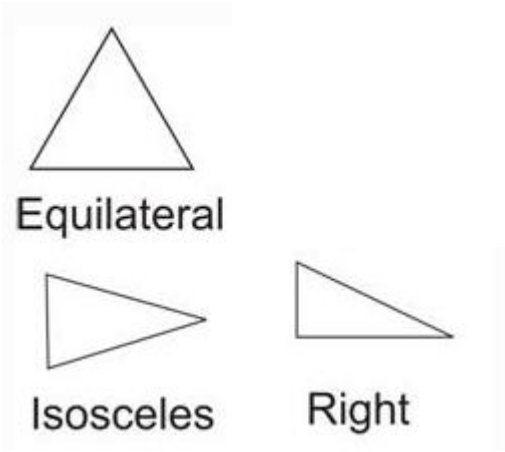
Problem 1

- Write a program that takes the lengths of the three sides of a triangle and determines the type of the triangle (equilateral triangle, isosceles triangle, right triangle, normal triangle) if it is a valid triangle, and outputs that it is an invalid triangle otherwise. For a valid triangle, the sum of two sides must be greater than the other side.



Problem 1

- **Equilateral triangle**
  - A triangle with all three sides the same length and all three angles are 60 degrees.
- **Isosceles triangle**
  - Two sides are the same length, and two angles are the same.
- **Right triangle**
  - One angle is 90 degrees.



Problem 1

- **Program output**

```
[ohyong@newton Quiz1_s123]$ vi pr1.c
[ohyong@newton Quiz1_s123]$ gcc pr1.c -o pr1
[ohyong@newton Quiz1_s123]$ ./pr1
Enter three sides of a triangle :30 40 50
Right triangle
```

```
[ohyong@newton Quiz1_s123]$ ./pr1
Enter three sides of a triangle :30 30 30
Equilateral triangle
```

```
[ohyong@newton Quiz1_s123]$ ./pr1
Enter three sides of a triangle :30 40 40
Isosceles triangle
```

```
[ohyong@newton Quiz1_s123]$ ./pr1
Enter three sides of a triangle :30 40 45
Normal triangle
```

```
[ohyong@newton Quiz1_s123]$ ./pr1
Enter three sides of a triangle :30 40 100
Not a valid triangle.
```

Problem 2

- Write a function to calculate the distance between two points. Write dist() to calculate the distance between two points (x_1, y_1), (x_2, y_2). If the dist() function is not implemented and is processed within the main() function, 0 points are obtained. The formula to find the distance between two points is:

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Problem 2

- **Program output**

```
[ohyong@newton Quiz1_s123]$ vi pr2.c
[ohyong@newton Quiz1_s123]$ gcc pr2.c -o pr2 -lm
[ohyong@newton Quiz1_s123]$ ./pr2
Enter the coordinates of the first point(x, y): 1 1
Enter the coordinates of the second point(x, y): 10 10

The distance between two points is 12.727922
```

```
[ohyong@newton Quiz1_s123]$ ./pr2
Enter the coordinates of the first point(x, y): 1 1
Enter the coordinates of the second point(x, y): 5 5

The distance between two points is 5.656854
```

Problem 3

- Draw the following pattern using *nested loops*. If you do not use nested loop and draw using only printf(), you get 0 points.

- **Program output**

```
[ohyong@newton Quiz1_s123]$ vi pr3.c
[ohyong@newton Quiz1_s123]$ gcc pr3.c -o pr3
[ohyong@newton Quiz1_s123]$ ./pr3
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

Submission

- **Submit to Newton server**

At the end of the Quiz1, submit your C source file by typing

~gs1401/bin/submit Quiz1_s123 pr1.c pr2.c pr3.c // due : 2:00 pm

You may check that you have submitted your source code correctly by typing

~gs1401/bin/submit -check