Subject: PRF192- PFC
Workshop 05

Objectives: Use functions in the library math.h for getting an integer at random and stdio.h for formatting output

Grading: 4 problem, marks: 2, 2, 3, 3

Problem 1. Dice Throws (2 marks)

You are required to develop a program that will throw two dice until the top faces of the two dice total to a specified number.

The output from your program looks something like:

```
 Dice Thrower
============
Total sought : 11
Result of throw 1 : 1 + 3
Result of throw 2 : 4 + 4
Result of throw 3 : 6 + 2
Result of throw 4 : 5 + 6
You got your total in 4 throws!
```

Algorithm should be as the following

```
/* Get a random integer between min and max randomly */
int intRandom(int min, int max)
{  /* Refer to the lecture to get algorithm for this task */
}
main()
Variable : int total, x,y, count
do
 { Accept total;
}
while (total<2 || total >12);
count =1;
do
{  x= intRandom(2,6);
   y= intRandom(2,6);
   Print out (“Result of throw %d “ %d + %d\n”, count, x, y)
   count++;
}
while (x+y != total);
```

Problem 2. Ball Lottery (2 marks)

A basket contains ten balls.
Balls are numbered from 1 to 10.
User gets a pair of balls and he/she hopes that sum of numbers is equal to a known expected total.
This problem is the same with the previous problem but the total is between 2 to 20.

The output from your program looks something like:

```
 Ball Lottery
============
Total sought : 11
Result of picks 1 and 2 : 1 + 3
Result of picks 3 and 4 : 4 + 5
Result of picks 5 and 6 : 6 + 3
Result of picks 7 and 8 : 5 + 6
You got your total in 8 picks!
```

The algorithm for this program is similar to those in the previous problem

Problem 3. Program using menu (3 marks)

Write a C program using the following simple menu:
1- Processing date data
2- Character data
3- Quit
Choose an operation:

- When user chooses 1: User will enter values of date, month, year then the program will announce whether this date is valid or not.
- -When user chooses 2: User will enter two characters, then the program will print out ASCII codes of characters between them using descending order. Examples:
  Input: ca
  Output:
  c: 99, 63h
  b: 98, 62h
  a: 97, 61h

Problem 4. Program using menu (3 marks)

Write a C program using the following simple menu:
1- Quadratic equation (phương trình bậc 2)
2- Bank deposit problem
3- Quit
Choose an operation:

- When user chooses 1: User will enter values describing a quadratic equation then the program will print out its solution if it exists.
- When user chooses 2: User will enter his/her deposit (a positive number), yearly rate (a positive number but less than or equal to 0.1), number of years (positive integer), then the program will print out his/her amount after this duration.

Validations

- Deposit, d >0
- Yearly rate, r: > 0.0 to <1.0
- Number of year, n>0
- Amount at the n(th) year: $P = d(1+r)^n$, Use the function **pow(x,y)** in Math.h for x^y