

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

Submission:

Please submit your work including a report and source code. All of them should be contained in a directory which is named as `Workshop3_yourName_yourStudentID`. Then zip this directory and submit.

The report **MUST** be a pdf file. Name of the file should contain your name and your student ID, such as `Workshop3_yourName_yourStudentID`.

The report must contain the pictures of all the test cases that you have done to test your programs.

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