National University of Computer and Emerging Sciences



Lab Manual

for

Programming Fundamentals

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| Section | PF BDS 1A1-1A2 |
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# Lab Manual 05

## Task 1

A mobile phone service provider has three different subscription packages for its customers:

Package A: For $39.99 per month 450 minutes are provided. Additional minutes are $0.45 per minute.

Package B: For $59.99 per month 900 minutes are provided. Additional minutes are $0.40 per minute.

Package C: For $69.99 per month unlimited minutes provided. Write a program that calculates a

customer’s monthly bill. It should ask which package the customer has purchased and how many minutes were used. It should then display the total amount due. Input Validation: Be sure the user only selects package A, B, or C.

## Task 2

Let’s design a game of Rock-Paper-Scissors in C++. There are 2 players and both of them simultaneously say their words ('P' for paper, 'S' for scissors, and ‘R’ for rock). The rules of the game are simple.

* Rock dominates Scissors
* Paper dominates Rock
* Scissors dominate Paper

If player-1 says **‘P**’ and player-2 says **‘R’**, you'll print "**Player 1 wins**". Likewise, if player-1 says **‘P’** and player-2 says **‘S**’, you'll print "**Player 2 wins**" and so on. If both the players say the same word, it's a **draw**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Player-2** | | | |
| **Player-1** |  | ***Rock*** | ***Paper*** | ***Scissors*** |
| ***Rock*** | Draw | Player-2 Wins | Player-1 Wins |
| ***Paper*** | Player-1 Wins | Draw | Player-2 Wins |
| ***Scissors*** | Player-2 Wins | Player-1 Wins | Draw |

## Task 3:

## Running on a particular treadmill you burn 3.6 calories per minute. Write a program that uses a loop to display the number of calories burned after 5, 10, 15, 20, 25, and 30 minutes.

## Task 4:

A currency has the following denominations: 100Rs, 50Rs, 10Rs 1Rs. Write a C++ program that takes in as input an amount, and prints the breakup of the amount in terms of denominations. Your goal is to use as fewer notes as possible.

Sample Input: **Sample Outputs:**  
200 2 \* 100

301 3\*100, 1\*1

## 13 1\*10, 3\*1

## Task 5:

Write a C++ program that generates a random number between 0 and 20 and asks the user to guess the number. If the user guesses it right, he wins otherwise ask him to guess again.

**Sample Run:**

|  |
| --- |
| Enter a number greater than or equal to 0 and less than 20 : **15**  Your guess is higher than the number.  Guess again!  Enter a number greater than or equal to 0 and less than 20 : **8**  Your guess is lower than the number.  Guess again!  Enter a number greater than or equal to 0 and less than 20 : **10**  You guessed the correct number**!!!** |

**Note:** To generate a random number between 0-20 use following directives and commands. **#include<cstdlib>**

**srand(time(0))** // Initialize random number generator.  
**number = (rand() % 100)** //Generates random number between 0 and 100

**BEST OF LUCK**