National University of Computer and Emerging Sciences

Programming Fundamentals
Lab Manual 4
if statements and while loops

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Exercise 1 (if):

You are driving a little too fast, and a police officer stops you. Write a program to compute the result, encoded as an integer value: 0=no ticket, 1=small ticket, 2=big ticket. If speed is 60 or less, the result is 0. If speed is between 61 and 80 inclusive, the result is 1. If speed is 81 or more, the result is 2. Unless it is your birthday -- on that day, your speed can be 5 higher in all cases.

Exercise 2 (if):

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. You 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

Exercise 3 (while):

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

Exercise 4 (while):

The ancient Greeks classified numbers geometrically. For example, a number was called “triangular” if that number of pebbles could be arranged in a symmetric triangle as shown in the figure below. The first ten triangular numbers are 1, 3, 6, 10, 15, 21, 28, 36, and 45. Write a program that takes as input a number N and prints whether it is triangular or not.