National University of Computer and Emerging Sciences

Lab # 08

For

Programming Fundamentals Lab

Lab Instructor(s)	Mr. Mughees Ismail
Semester	Fall 2022

FAST School of Computing

Instructions:

1. Make a word document with the convention "SECTION_Lab#_ROLLNO" and put all your source code and snapshots of its output in it.
2. Plagiarism is strictly prohibited, do not copy anything from internet, or any of your friend else your assignment will be marked 0.
3. Do not discuss solutions with one another.
4. Write the code with proper dialogues to improve the user interaction with your program.

Task 01:

Write a C++ program that takes the month number input and print the name of month and number of days in month. For example, if user enters 7, it should print "July" and "31".

Task 02:

Make a menu driven simple calculator using switch case. Do not use any if else. For (-,+,/,*)

Task 03:

Recall that in C++, while loops are used when a certain statement(s)must be executed repeatedly until certain conditions are met. Following is a C++ program that uses a while loop to find a Fibonacci number.
Consider the following sequence of numbers:
1, 1, 2, 3, 5, 8, 13, 21, 34, ...

Given the first two numbers of the sequence (say, a1 and a2), the nth number an, n >=3, of this sequence is given by:

An= an-1 + an-2
Thus:
a3 = a2 + a1 = 1 + 1 = 2.
a4 = a3 + a2 = 2 + 1 = 3.

and so on.
Such a sequence is called a Fibonacci sequence. In the preceding sequence, a2 = 1 and a1 = 1. However, given any first two numbers, using this process, you can determine the nth number, an, n >= 3 of the sequence. The number determined this way is called the nth Fibonacci number. Suppose a2 = 6 and a1 = 3.

Then:
a3 = a2 + a1 = 6 + 3 = 9; a4 = a3 + a2 = 9 + 6 = 15

Next, we write a program that determines the nth Fibonacci number given the first two numbers.

Input The first two Fibonacci numbers and the desired Fibonacci number.
Output The nth Fibonacci number.

Task 04:

Write a C++ program that takes a number input and checks if it's prime or not, If it's prime, your program should print the number and prints "Prime numbers are good", if it's not prime, your program should abort without printing anything.
Hint: use assert( )

```
Enter a number:7
7 is prime number
Prime numbers are good
PS C:\Users\Hammad\Desktop> ./a
Enter a number:12
Assertion failed: check == false, file test.cpp, line 21
```

Task 05:

Write a program that takes a number input from user and prints the factorial of that number.

Bonus Task:

Make this Pattern using nested while loop

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*****
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Best of luck