Swinburne University of Technology Sarawak

COS10009 Introduction to Programming – Semester 1 / 2018

Control Structure – Loop (Lab 04)

Core Task 1

To Do

Nested *for* Loop

Write a C program to produce the following output using a nested *for* loop:

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*****
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Core Task 2

To Do

Temperature Reading

Retrieve the program you have developed for Core Task 2 in Lab 3 from your Black Board submission link, apply loop structure into your program to fully implement the flowchart you have developed previously.

Core Task 3

To Do

Guess Number

Write a C program that generates a random number between the interval (0, 100). It then prompts the user to guess the random number generated. Until the user enters the correct guess, the program will tell the user if the guess is equal, larger or less than the random number generated.
(Hints: Refer to RandomNo.ppt slide to learn how to generate a random number)

Vital Task

To Do

Login Verification

To practice the application of control structures, we will create a program that will:

- Perform authentication process so that you are the only one who can log in with your own student id and security pin.
- The program will ask the user to enter student id and a six digits security pin.
- Prompt for input repeatedly if the input is not in a valid format.
- Display “Successfully Login” or “Access Denied” based on the verification of student id and security pin entered by the user.

Variables:

- Student id input by user will be stored in an integer type variable
- Security pin input by user will also be stored in an integer type variable

Requirements:

- The Student ID input by the user should be in either seven or eight digits. Otherwise, display “The Student ID should be in 7 or 8 digits, please try again”.
- The security pin input by the user should consist of 6 digits numerical values. Otherwise, display “Please enter a 6-digit pin”
- If the user enters the correct student id and security pin, print “Successfully Login”, otherwise display “Wrong password, try again”
- After getting the correct student id, if the security pin entered by user fails to match the correct security pin for five consecutive attempts, display “Access Denied” and end the program.

Hints: Count Number of Digits of an Integer

Challenge Task

To Do

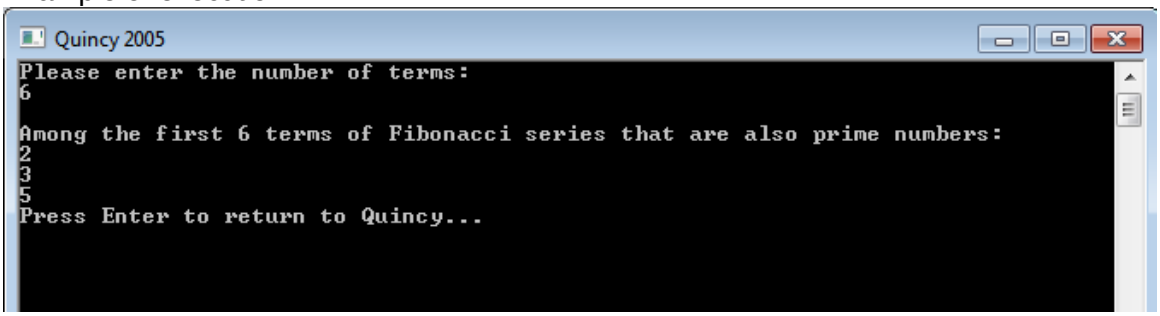
Fibonacci Series and Prime Number

Develop a C program that prints the numbers of terms of Fibonacci series as requested by the user. However, only those Fibonacci numbers which are also prime numbers will be printed to the screen as the final output.

Fibonacci numbers are numbers in Fibonacci series. First few numbers of series are 0, 1, 1, 2, 3, 5, 8 etc, except first two terms in sequence every other term is the sum of two previous terms, For example 8 = 3 + 5 (addition of 3, 5). This sequence has many applications in mathematics and Computer Science.

Prime numbers is a whole number greater than 1, whose only two whole-number factors are 1 and itself. The first few prime numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23, and 29.

Example of execution:



Note: You do not need “recursion” to complete this task.