Lab #05

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CPSC 1150 - 003

Instructor: H. Darbandi

Lab Title: Top-down design, PseudoCode and Functions

Date Completed: Jun 11, 2020

Department: CSIS

Program: Top-down design

File Name: Lab05.java

Purpose: Practice with Top-down design, pseudo code and functions

Technical Information:

(You should fill the following information based on compiler and computer you are using).

Compiler: Java SDK version 14

Computer: AMD Ryzen 5 2600 3.40 GHz, 16 GB ram, 64-bit processor, Java SDK 14

Operating System: Windows 10

Language: Java

Program Logic (Pseudocode)

Algorithm:

**START**

**Main Body:**

1. inputNumber 🡨 input
2. for loop from 0 to the number inputted
3. check if isPrime
4. check if is Palindrome
5. if both, print

**isPrime(int n)**

1. variable primeCheck
2. for loop from 0 to half of accepted number
   1. prime check = remainder(n, i)
   2. if primeCheck == 0, return false
3. return true otherwise

**isPalindrome(int n)**

1. compare accepted number with reverse of itself.
   1. If they are equal
      1. return true
   2. Else
      1. return false

**reverse(int n)**

1. Variables reversedNumb and last digit
   1. Initialize reversedNumb to 0
2. While n > 0
   1. lastDigit = remainder(n,10)
   2. reversedNumb = reversedNum \* 10 + lastDigit
   3. n / 10.
3. Return reversed num

**BONUS:**

**even2odd(int n)**

1. Variables lastDigit, and reverse
   1. Initialize reverse to 0
2. While (n>0)
   1. lastDigit = remainder(n,10)
      1. if(remainder(lastDigit,2) is 0)
         1. add 1 to lastDigit
         2. rev = rev \* 10 + lastDigit
      2. else
         1. rev = rev\*10 + lastDigit
   2. n / 10
3. return reverse(rev) (return the reverse number of reverse)

**END**

Generate your test cases based on the specifications in your lab assignment. Follow following format for each test case: (Refer to external document of your previous lab)

*purpose*

*input*

*output*

*expected value*

*passed or failed*

**Test Cases:**

**Test Case 1:**

Input: 40

Expected Output: 2 3 5 7 11

Output: 2 3 5 7 11

Passed

**Test Case 2:**

Input: 130

Expected Output: 2 3 5 7 11 101

Output: 2 3 5 7 11 101

Passed

**Test Case 3:**

Input: 500

Expected Output: 2 3 5 7 11 101 131

Output: 2 3 5 7 11 101 131

Passed

**Test Case 1 (Even to Odd):**

Input: 984196

Expected Output: 995197

Output: 995197

Passed

**Test Case 2 (Even to Odd):**

Input: 54681245

Expected Output: 55791355

Output: 55791355

Passed