Alexandria University
Faculty of Engineering
Specialized Scientific Programs
Computer & Communication Program
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Programming (1)
Course Code: CC271 / CSE126
Lecturer: Prof. Dr. Nagia Ghanem
Dr. Samia Hafez

Lab 01
Revision

OBJECTIVES

- Revision on Variables and Arithmetic Operations.
- Revision on if Statements.
- Revision on loops.
- Revision on nested loops.

1. Write a program that reads in the radius of a circle, then uses this radius to print the following (Consider the value of π=3.14159):
   - Circle's diameter (2 * radius).
   - Circle's circumference (2 * π * radius).
   - Circle's area (π * radius * radius).
2. Write a program in C to read any Month Number in an integer and display the number of days for this month.
3. Write a C program that takes N integer's values from the user and then calculates how many numbers are entered between 70 and 100 inclusive.
4. Write a program in C to find the Greatest Common Divisor (GCD) (the largest number that divides both) of two numbers.

   Example:

   Enter two numbers: 36 60

   Output: GCD is 12

   Clarification of output

   36 = 2 x 2 x 3 x 3

   60 = 2 x 2 x 3 x 5
5. Write a C program to check whether an integer is prime or not.
6. Using what we developed above, write a C program to display the prime numbers between two intervals inclusive.

   Example:

   Enter two numbers (intervals): 4 17

   Output: Prime numbers between 4 and 17 are: 5 7 11 13 17

HOMEWORK PROBLEMS

1. Write a C program that takes an integer number from the user and then prints it in reverse order.

2. Write a C program to check the Armstrong number.
   A positive integer is called an Armstrong number when this rule holds: The sum of each digit raised to the power of the count of digits equals the numberitself

   Examples:

   - Please enter the number: 93084
     `Output: This number is Armstrong's number.`

     Clarification of output
     Count of digits = 5
     So, $9^5 + 3^5 + 0^5 + 8^5 + 4^5 = 93084$ so this number is Armstrong

   - Please enter the number: 371
     `Output: This number is Armstrong's number.`

     Clarification of output
     Count of digits = 3
     So, $3^3 + 7^3 + 1^3 = 371$ so this number is Armstrong

   - Please enter the number: 372
     `Output: This number is not an Armstrong number.`

     Clarification of output
     Count of digits = 3
     So, $3^3 + 7^3 + 2^3 = 378$ so this number is not Armstrong

3. Write a C program to calculate the following series by summing the n terms of the infinite series:

$$Z = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \frac{x^9}{9!} - \cdots$$

Using **n** terms where **n** is an input. The program must take the value of x and n from the user.

4. Write a C program that calculates the power ($y = a^b$). Your program should take a float number a and integer parameter b then calculate the float y.
   Don't use the pow function in math.h!