North South University

Department of Electrical and Computer Engineering

CSE215L MIDTERM, FALL 2022
Section: 05

Total: 50, Time: 1 hour

1) Write a method to print out all Armstrong numbers between 1 and 999. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number.
For example, 153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3) [15]

2) Write a program to implement matrix addition and subtraction.

Define a 'class matrix' with-

-private variables for storing a matrix (2 dimensional double type array)

-private variables for storing no. of rows and no. of columns

-Constructor for initializing member variables and for allocating the 2D array: matrix(int r, int c)

Function to accept input(matrix values) from user:

public void get_input()

-Function to add 2 matrices and return the result matrix object:

public matrix add(matrix m1)

-Function to subtract 2 matrices and return the result matrix object:

public matrix sub(matrix m1)

-Function to print the matrix row-by-row: public void print_matrix()

Create two matrix objects m1 and m2. Get the no. of rows for both the matrices from the user and initialize them by calling the constructor. Perform addition and subtraction on matrices m1 and m2. Finally, print the result matrix using the print_matrix() function. [20]

3) Take a 5x5 array. Initialize the array with user inputs. From this array, do the following operations:
-Count the number of odd values, values divisible by 7
-Interchange the values of rows and columns: for example, value of row 0 should go to column 0 and vice versa. [15]