CS115 - Assignment# 4
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Project 1

Implement a C++ class to model the mathematical operations of a matrix. Your class should include the following functions.

- add() which adds two matrices;
- power() which raises the first matrix to power n;
- == which returns true if both matrices are equal. You need to overload the C++ equality operator.

A sample run follows.

```
Enter the number of rows: 2
Enter the number of columns: 3

Enter the elements of matrix 1 row by row:
1 0 3
5 1 2

Enter the elements of matrix 2 row by row:
1 1 2
1 0 4

matrix 1 == matrix 2?
No

matrix 1 + matrix 2:
2 1 5
6 1 6

matrix 1 power n. Enter n: 2
1  0 9
25 1 4
```

Project 2

Implement a class to play the game of tic-tac-toe with two players. The class contains as `private` data member a 3 by 3 array of integers. The constructor should initialize the empty

board to zeros. When the first player moves, place 1 in the specified square; place 2 when the second player moves. Each move must be done in an empty square. After each move, determine if the game has been won or if the game is a draw.

A sample run follows.

```
0 0 0
0 0 0
0 0 0

Player1 move: 1 1
1 0 0
0 0 0
0 0 0

Player2 move: 2 2
1 0 0
0 2 0
0 0 0

Player1 move: 3 1
1 0 0
0 2 0
1 0 0

Player2 move: 1 1
1 1 is used. Please choose another move: 3 3
1 0 0
0 2 0
1 0 2

Player1 move: 2 1
1 0 0
1 2 0
1 0 2

Player1 wins!
```

Hand In

1. The header, implementation and driver programs should be respectively named : `Matrix.h`, `Matrix.cpp` and `TestMatrix.cpp` for project 1; `TicTacToe.h`, `TicTacToe.cpp` and `TestTicTacToe.cpp` for project 2.

2. Your C++ programs **SHOULD** compile using `CC` (Sun compiler) under Hercules.

3. Submit the makefiles for both projects, named respectively makefile1 and makefile2.

4. Submit all the above files using UR Courses.