OBJECT ORIENTED PROGRAMMING LAB

Experiment-1

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Aim: *Write a program for multiplication of two matrices using OOP.*

Performance Instructions:

1. The program takes two matrices and multiplies them.
2. If number of columns of matrix A is not equal to number of rows of matrix B, then matrices cannot be added.
3. The program is exited.
4. Else they are multiplied and the result is printed. 5. Exit.

Sudo Code

```
// Enter rows and columns for matrix

cout << "Enter rows and columns for first matrix: ";
cin >> r1 >> c1;
cout << "Enter rows and columns for second matrix: ";
cin >> r2 >> c2;

// Storing elements of matrix.

cout << endl << "Enter elements of matrix 1:" << endl;
for(i = 0; i < r1; ++i)
for(j = 0; j < c1; ++j)
{
cout << "Enter element a" << i + 1 << j + 1 << " : ";  //Note Elements can be stored using rand() function as well
cin >> a[i][j];
}
// Multiplying matrix a and b and storing in array mult.
for(i = 0; i < r1; ++i)
for(j = 0; j < c2; ++j)
for(k = 0; k < c1; ++k) {
mult[i][j] += a[i][k] * b[k][j];
}
// Displaying the multiplication of two matrix.

cout << endl << "Output Matrix: " << endl;
for(i = 0; i < r1; ++i)
for(j = 0; j < c2; ++j) {
cout << " " << mult[i][j];
if(j == c2-1)
```

```
cout << endl;
}

return 0;
}
```

#Code

```
#include <bits/stdc++.h>
using namespace std;

class matrix{
public:
   int n, m;
   int arr[100][100];
void get_size(){
   cout<<"Enter The size of Matrix (less than 100)"<<endl;
cin>>n>>m;
}
void give_val(){
for(int i =0;i<n;i++)
   for(int j = 0; j <m ;j++)
      arr[i][j] = rand()%200;
}
void display(){
for(int i =0;i<n;i++){
   for(int j = 0; j <m ;j++)
      cout<<arr[i][j]<<" ";
      cout<<endl;
}
cout<<"_____"<<endl;
}
};

void matrix_mul(matrix val_1 , matrix val_2){
if(val_1.m != val_2.n){
   cout<< "Matrices Can't be Multiplied"<<endl;
   return;
}
int last[val_1.n][val_2.m];
for(int i=0;i<val_1.n;i++){
    for(int j=0;j<val_2.m;j++){
       last[i][j] = 0;
        for(int k=0;k<val_2.m;k++){
          last[i][j] += val_1.arr[i][k]*val_2.arr[k][j];
        }
     }
}
for(int i =0;i<val_1.n;i++){
   for(int j = 0;j<val_2.m;j++){
```

```
        cout<<last[i][j]<<" ";
    }
    cout<<endl;
}
return ;
}
int main(){
matrix a,b;
a.get_size();
b.get_size();
a.give_val();
b.give_val();
a.display();
b.display();
matrix_mul(a,b);
return 0;
}
```

```
#include <bits/stdc++.h>
using namespace std;

class matrix{
public:
    int n, m;
    int arr[100][100];
void get_size(){
    cout<<"Enter The size of Matrix (less than 100)"<<endl;
cin>>n>>m;
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void give_val(){
for(int i =0;i<n;i++)
    for(int j = 0; j <m ;j++)
        arr[i][j] = rand()%200;
}
void display(){
for(int i =0;i<n;i++){
    for(int j = 0; j <m ;j++)
        cout<<arr[i][j]<<" ";
        cout<<endl;
}
cout<<"_____"<<endl;
}
};

void matrix_mul(matrix val_1 , matrix val_2){
if(val_1.m != val_2.n){
    cout<< "Matrices Can't be Multiplied"<<endl;
```

```
"C:\Users\chand\Desktop\coding\open folders\test2\main.exe"
Enter The size of Matrix (less than 100)
2 2
Enter The size of Matrix (less than 100)
2 2
41 67
134 100
_____
169 124
78 158
_____
12155 15670
30446 32416

Process returned 0 (0x0)   execution time : 2.203 s
Press any key to continue.
```