THE ICFAI UNIVERSITY

RAIPUR

SESSION :- 2022-26

SUBMITED BY

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Branch:- B.Tech (CSC) 3rd Sem

Subject:- Mathematics (MA 201)

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❖ *Q.01 Sum of two matrix*

```
clc
m=input("enter number of rows of the Matrix: ");
n=input("enter number of columns of the Matrix: ");
disp('enter the first Matrix')
for i=1:m
 for j=1:n
 A(i,j)=input('\');
 end
end
disp('enter the second Matrix')
for i=1:m
 for j=1:n
 B(i,j)=input('\');
 end
end
for i=1:m
 for j=1:n
```

```
 C(i,j)=A(i,j)+B(i,j);
 end
end
disp('The first matrix is')
disp(A)
disp('The Second matrix is')
disp(B)
disp('The sum of the two matrices is')
disp(C)
```

- ***Output***

```
enter number of rows of the Matrix: 3

enter number of columns of the Matrix: 3


  "enter the first Matrix"
\59

\65

\-98
```

\24

\19

\68

\32

\80

\26

"enter the second Matrix"

\64

\-54

\30

\68

\21

\98

\65

\34

\97

"The first matrix is"

59. 65. -98.
24. 19. 68.
32. 80. 26.

"The Second matrix is"

64. -54. 30.
68. 21. 98.
65. 34. 97.

"The sum of the two matrices is"

123. 11. -68.
92. 40. 166.
97. 114. 123.

❖ *Q.02 Multipication of two matrix*

```
clc
a=01
disp(''Question No.02 Multipication of two matrix03'')
m=input(''Enter number of rows of the first Matrix: '');
n=input(''Enter number of columns of the first Matrix: '');
p=input(''Enter number of rows of the second Matrix: '');
q=input(''Enter number of columns of the second Matrix:
'');
if n==p
disp('Matrices are conformable for multiplication')
else
disp('Matrices are not conformable for multiplication')
break;
end
disp('enter the first Matrix')
for i=1:m
3
for j=1:n
A(i,j)=input('\');
end
end
disp('enter the second Matrix')
for i=1:p
for j=1:q
B(i,j)=input('\');
end
end
C=zeros(m,q);
```

```
for  i=1:m
 for  j=1:q
 for k=1:n
C(i,j)=C(i,j)+A(i,k)*B(k,j);
end
end
end
disp('The first matrix is')
disp(A)
disp('The Second matrix is')
disp(B)
disp('The product of the two matrices is')
disp(C)
```

❖ Output

```
Enter number of rows of the first Matrix: 4

Enter number of columns of the first Matrix: 4

Enter number of rows of the second Matrix: 4

Enter number of columns of the second Matrix: 4
```

"Matrices are conformable for multiplication"

"enter the first Matrix"

\65

\32

\98

\54

\21

\38

\94

\65

\25

\66

\98

\36

\63

\59

\62

\21

"enter the second Matrix"

\31

\20

\89

\65

\88

\65

\20

\3

\98

\65

\23

\321

\30

\65

\98

\65

"The first matrix is"

65. 32. 98. 54.
21. 38. 94. 65.
25. 66. 98. 36.
63. 59. 62. 21.

"The Second matrix is"

31. 20. 89. 65.
88. 65. 20. 3.
98. 65. 23. 321.
30. 65. 98. 65.

"The product of the two matrices is"

16055. 13260. 13971. 39289.
15157. 13225. 11161. 35878.
17267. 13500. 9327. 35621.
13851. 10490. 10271. 25539.

❖ Q.03 Eigen values

```
clc
disp('enter the Matrix')
for i=1:2
 for j=1:2
 A(i,j)=input('\');
 end
end
b=A(1,1)+A(2,2);
c=A(1,1)*A(2,2)-A(1,2)*A(2,1);
// characteristic equation is e^2-trace(A)+ det(A)=0
disp('The characteristic equation is:')
disp([' e^2 + ' string(-b) '*e + ' string(c) ' = 0'])
e1=(b+sqrt(b^2-4*c))/2;
e2=(b-sqrt(b^2-4*c))/2;
if A(1,2) ~= 0
 v1 = [A(1,2); e1-A(1,1)];
 v2 = [A(1,2); e2-A(1,1)];
elseif A(2,1) ~= 0
 v1 = [e1-A(2,2); A(2,1)];
 v2 = [e2-A(2,2); A(2,1)];
else
 v1 = [1; 0];
 v2 = [0; 1];
```

```
end
 disp('First Eigen value is:');
 disp(e1)
 disp('First Eigen vector is:');
 disp (v1)
 disp('Second Eigen value is:');
 disp(e2)
 disp('Second Eigen vector is:')
  disp v2
```

❖ ***Output***

```
"enter the Matrix"
\69

\32

\78

\21

 "The characteristic equation is:"
```

" e^2 + " "-90" "*e + " "-1047" " = 0"

"First Eigen value is:"

100.42563

"First Eigen vector is:"

32.
31.425626

"Second Eigen value is:"

-10.425626

"Second Eigen vector is:"

"v2"

❖ Q.04 Transpose of matrix

```
clc
m=input("Enter number of rows of the Matrix: ");
n=input("Enter number of columns of the Matrix: ");
disp('Enter the Matrix')
for i=1:m
 for j=1:n
 A(i,j)=input('\');
 end
end
B=zeros(n,m);
for i=1:n
 for j=1:m
B(i,j)=A(j,i)
end
end
disp('Entered matrix is')
disp(A)
disp('Transposed matrix is')
disp(B)
```

❖ ***Output***

Enter number of rows of the Matrix: 2

Enter number of columns of the Matrix: 2

"Enter the Matrix"

\59

\62

\34

\12

"Entered matrix is"

59. 62.
34. 12.

"Transposed matrix is"

59. 34.
62. 12.

❖ Q.05 Multipication & Transpose of Matrix

```
clc
m=input("Enter number of rows of the first Matrix: ");
n=input("Enter number of columns of the first Matrix: ");
p=input("Enter number of rows of the second Matrix: ");
q=input("Enter number of columns of the second Matrix:
");
if n==p
disp('Matrices are conformable for multiplication')
else
disp('Matrices are not conformable for multiplication')
break;
end
disp('enter the first Matrix')
for i=1:m
for j=1:n
A(i,j)=input('\');
end
end
disp('enter the second Matrix')
for i=1:p
for j=1:q
B(i,j)=input('\');
end
end
C=zeros(m,q);
for i=1:m
for j=1:q
for k=1:n
```

```
C(i,j)=C(i,j)+A(i,k)*B(k,j);
end
end
end
disp('The first matrix is')
disp(A)
disp('The Second matrix is')
disp(B)
disp('The product of the two matrices is')
disp(C)
m=input("Enter number of rows of the Matrix: ");
n=input("Enter number of columns of the Matrix: ");
disp('Enter the Matrix')
for i=1:m
for j=1:n
A(i,j)=input('\');
end
end
B=zeros(n,m);
for i=1:n
for j=1:m
B(i,j)=A(j,i)
end
end
disp('Entered matrix is')
disp(A)
disp('Transposed matrix is')
disp(B)
```

❖ Output

Enter number of rows of the first Matrix: 3

Enter number of columns of the first Matrix: 3

Enter number of rows of the second Matrix: 3

Enter number of columns of the second Matrix: 3

"Matrices are conformable for multiplication"'

"enter the first Matrix"

\98

\65

\32

\54

\87

\96

\32

\21

\-98

```
 "enter the second Matrix"
\25

\65

\65

\32

\98

\21

\53

\58

\20


 "The first matrix is"

  98.   65.   32.
  54.   87.   96.
  32.   21.  -98.


 "The Second matrix is"

  25.   65.   65.
  32.   98.   21.
  53.   58.   20.
```

```
 "The product of the two matrices is"

  6226.   14596.   8375.
  9222.   17604.   7257.
 -3722.  -1546.    561.
Enter number of rows of the Matrix: 3

Enter number of columns of the Matrix: 3


 "Enter the Matrix"
\69

\32

\54

\87

\21

\30

\65

\39

\25


 "Entered matrix is"
```

69. 32. 54.
87. 21. 30.
65. 39. 25.

"Transposed matrix is"

69. 87. 65.
32. 21. 39.
54. 30. 25.