National Institute of Technology, Patna

EE lab CSL (2601)

Assignment no 10

Name : Sudhanshu Ranjan

Batch : 2020-2024

Roll no : 2002006

Class : BTECH EE

Instructor : Dr. Neha Mam

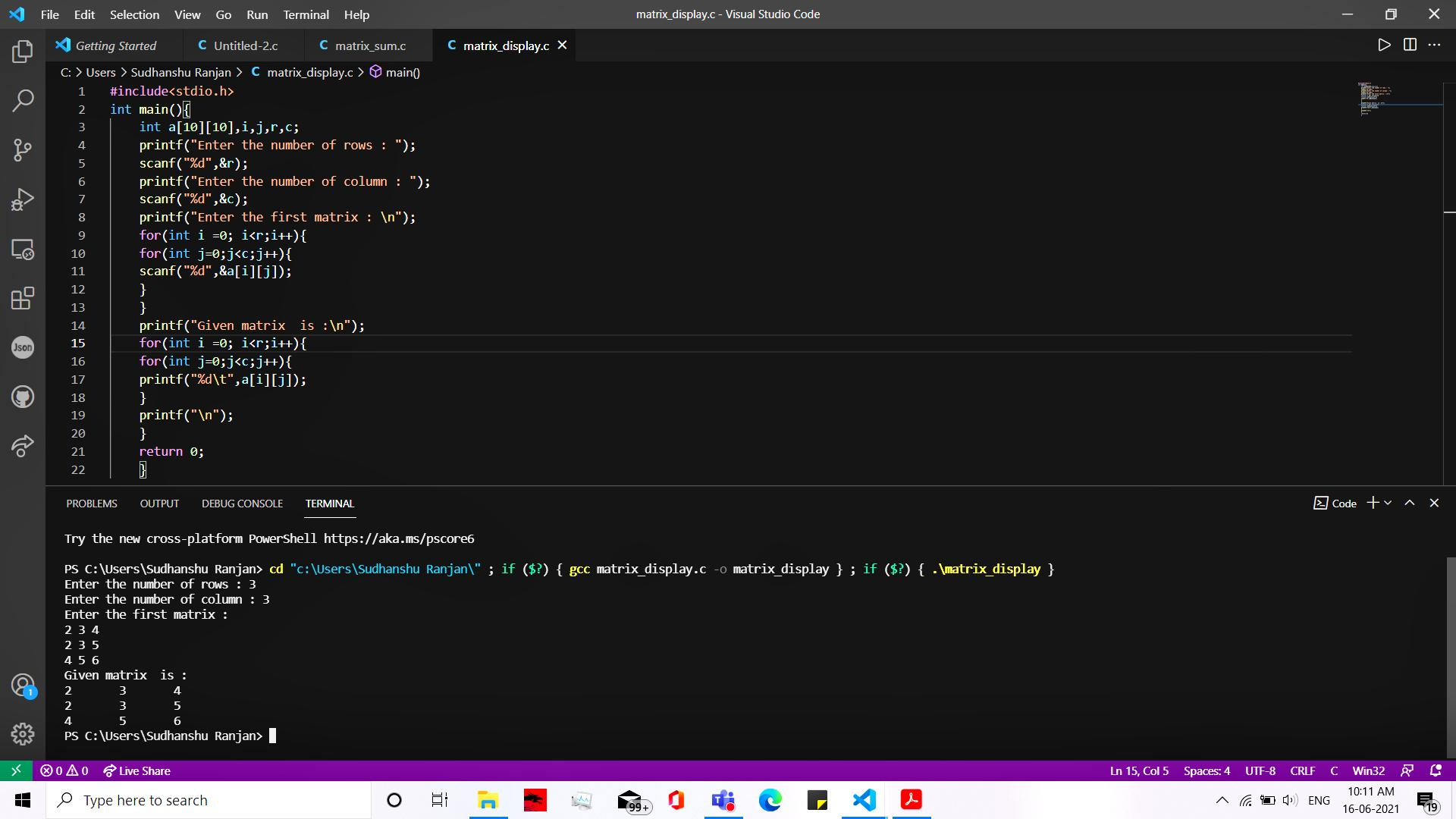
INDEX

Serial No.	Contents	Date	Remarks
1	WAP in C to store numbers in a 3x3 matrix and then display all the numbers in matrix format.	16.06.2021	
2	WAP in C to input two matrix of size mXn and then display the addition of both the matrix.	16.06.2021	
3	WAP in C to input a matrix of size 3X3. And then find the transpose of the matrix and display the result .	16.06.2021	
4	WAP in C to input two matrix of size mXn and pXq respectively. And then multiply them and display the result .	16.06.2021	

Page No.:
Date:

Q.1 WAP in C to store numbers in a 3×3 matrix and then display all the numbers in matrix format.

```
#include <stdio.h>
int main() {

    int a[10][10], j, i, r, c;
Printf("Enter the number of rows: ");
 scanf("%d" &r);

Printf("Enter the number of column: ");
 Scanf("%d,&c);

Printf("Enter the first matrix: \n");
  for( int i=0;  i<r ; i++) {
  for ( int j=0; j<c ; j++) {
   scanf ("%d", &a[i][j]) ;
  }
  }
Printf ("Given matrix is : \n");
for ( int i=0 ;  i<r;  i++){
 for( int j=0; j<c; j++){
  printf ("%d \t", a[i][j]);
 }
 Printf ("\n");
 }
 return 0;
}
```


File Edit Selection View Go Run Terminal Help
matrix_display.c - Visual Studio Code
Getting Started
Untitled-2.c
matrix_sum.c
matrix_display.c
C: > Users > Sudhanshu Ranjan > matrix_display.c > main()
#include<stdio.h>
int main(){
int a[10][10],i,j,r,c;
printf("Enter the number of rows : ");
scanf("%d",&r);
printf("Enter the number of column : ");
scanf("%d",&c);
printf("Enter the first matrix : \n");
for(int i =0; i<r;i++){
for(int j=0;j<c;j++){
scanf("%d",&a[i][j]);
}
}
printf("Given matrix is :\n");
for(int i =0; i<r;i++){
for(int j=0;j<c;j++){
printf("%d\t",a[i][j]);
}
printf("\n");
}
return 0;
}
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\Sudhanshu Ranjan> cd "c:\Users\Sudhanshu Ranjan\" ; if ($?) { gcc matrix_display.c -o matrix_display } ; if ($?) { .\matrix_display }
Enter the number of rows : 3
Enter the number of column : 3
Enter the first matrix :
2 3 4
2 3 5
4 5 6
Given matrix is :
2 3 4
2 3 5
4 5 6
PS C:\Users\Sudhanshu Ranjan>
Live Share
Ln 15, Col 5
Spaces: 4
UTF-8
CRLF
C
Win32
Type here to search
ENG
10:11 AM
16-06-2021

Page No:
Date:

Q.2. WAP in C to input two matrices of size mxn and then display the addition of both the matrices.

```
#include <stdio.h>
int main(){
 int a[10][10], b[10][10], j, i, r, c;
Printf("Enter the number of rows:");
Scanf("%d", &r);
Printf("Enter the number of column :");
scanf("%d", &c);
Printf("Enter the first matrix: \n");
 for(int i=0; i<r; i++){
 for(int j=0; j<c; j++){
  scanf("%d", &a[i][j]); }}

Printf("Enter the second matrix: \n");
for(int i=0; i<r; i++){
 for(int j=0; j<c; j++){
  scanf("%d", &b[i][j]); }}

Printf("Sum of the matrices is :\n");

for(int i=0; i<r; i++){
 for(int j=0; j<c; j++){
Printf("%d \t", a[i][j] + b[i][j];
}
 Printf("\n");
 }
return 0;
 }
```

Getting Started | Untitled-2.c | matrix.c

C: > Users > Sudhanshu Ranjan > matrix.c > main()

```c
#include<stdio.h>
int main(){
    int a[10][10],b[10][10],i,j,r,c;
    printf("Enter the number of rows : ");
    scanf("%d",&r);
    printf("Enter the number of column : ");
    scanf("%d",&c);
    printf("Enter the first matrix : \n");
    for(int i =0; i<r;i++){
    for(int j=0;j<c;j++){
    scanf("%d",&a[i][j]);
    }
    }
    printf("Enter the second matrix : \n");
    for(int i =0; i<r;i++){
    for(int j=0;j<c;j++){
    scanf("%d",&b[i][j]);
    }
    }
    printf("Sum of the matrices  is :\n");

    for(int i =0; i<r;i++){
    for(int j=0;j<c;j++){
    printf("%d\t",a[i][j]+b[i][j]);
    }
    printf("\n");
    }
    return 0;
    }
```

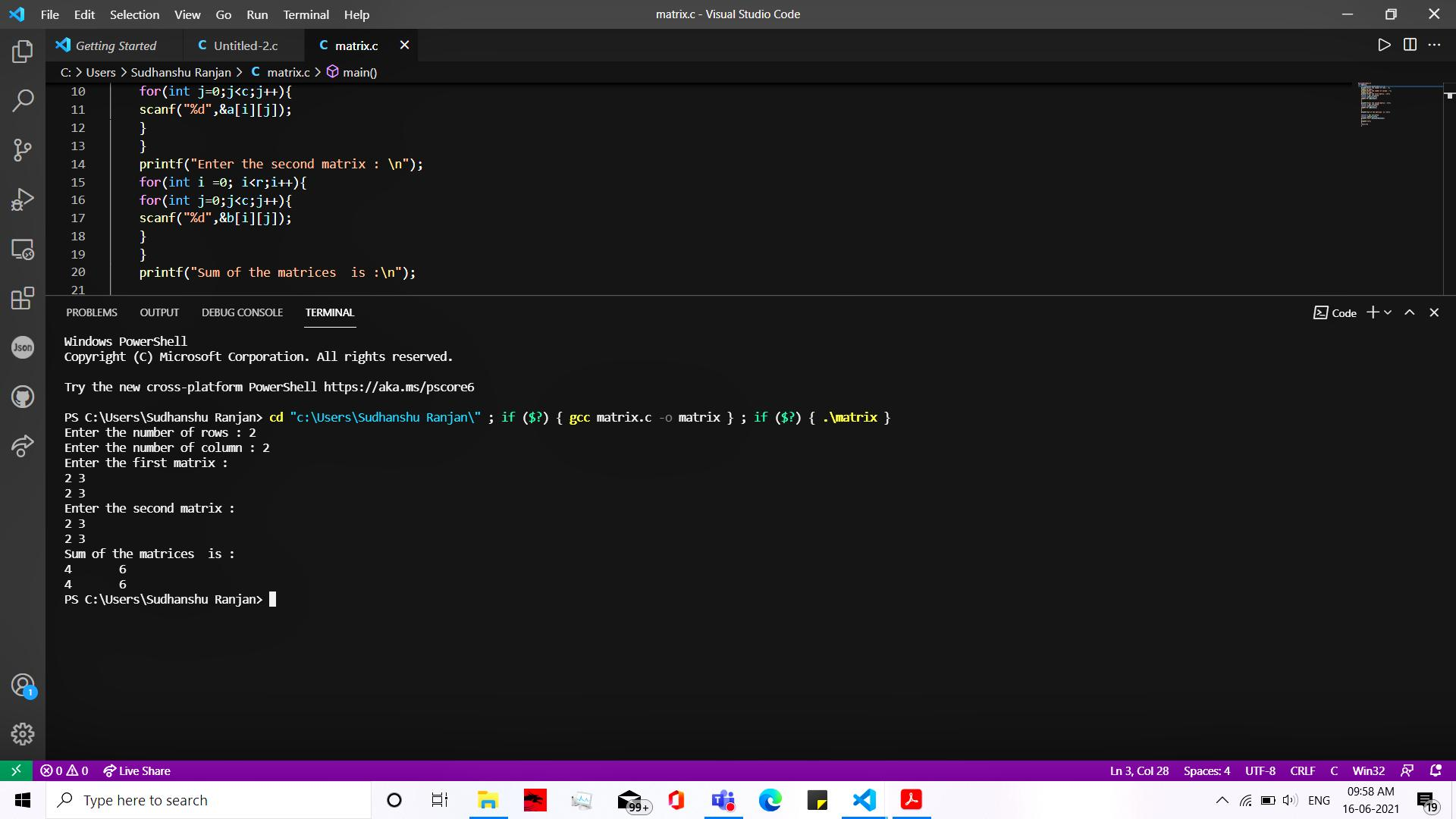
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Code

```
4       6
PS C:\Users\Sudhanshu Ranjan>
```

Live Share

Ln 29, Col 6 Spaces: 4 UTF-8 CRLF C Win32


File Edit Selection View Go Run Terminal Help
matrix.c - Visual Studio Code
Getting Started
Untitled-2.c
matrix.c
C: > Users > Sudhanshu Ranjan > matrix.c > main()
for(int j=0;j<c;j++){
scanf("%d",&a[i][j]);
}
}
printf("Enter the second matrix : \n");
for(int i =0; i<r;i++){
for(int j=0;j<c;j++){
scanf("%d",&b[i][j]);
}
}
printf("Sum of the matrices is :\n");
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\Sudhanshu Ranjan> cd "c:\Users\Sudhanshu Ranjan\" ; if ($?) { gcc matrix.c -o matrix } ; if ($?) { .\matrix }
Enter the number of rows : 2
Enter the number of column : 2
Enter the first matrix :
2 3
2 3
Enter the second matrix :
2 3
2 3
Sum of the matrices is :
4 6
4 6
PS C:\Users\Sudhanshu Ranjan>
Live Share
Ln 3, Col 28
Spaces: 4
UTF-8
CRLF
C
Win32
Type here to search
ENG
09:58 AM
16-06-2021

Page No.:
Date :

Q.3. WAP in C to input a matrix of size 3×3. And then find the transpose of matrix and display the result.

```
#include<stdio.h>
int main(){
int a[10][10], b[10][10], r, c;
Printf("Enter the number of rows : ");
Scanf("%d", &r);
Printf("Enter the number of columns: ");
Scanf("%d", &c);
printf("Enter the first matrix : \n");
  for(int i=0; i<r; i++){
  for(int j=0; j<c; j++){
  scanf("%d", &a[i][j]); }}

Printf("Enter the first matrix : \n");
  for(int i=0; i<r; i++){
  for(int j=0; j<c; j++){
    b[j][i] = a[i][j]; }}

Printf("Transpose of the matrix is : \n");
  for(int i=0; i<r; i++){
  for(int j=0; j<c; j++){
  Printf("%d \t", b[i][j]);
  }
  Printf("\n");
  }
return 0;
}
```

EXPLORER

FLUTTER_APPLICATION_1

OUTLINE

DEPENDENCIES

main.dart | transpose.c

C: > Users > Sudhanshu Ranjan > Desktop > snake game > C transpose.c > main()

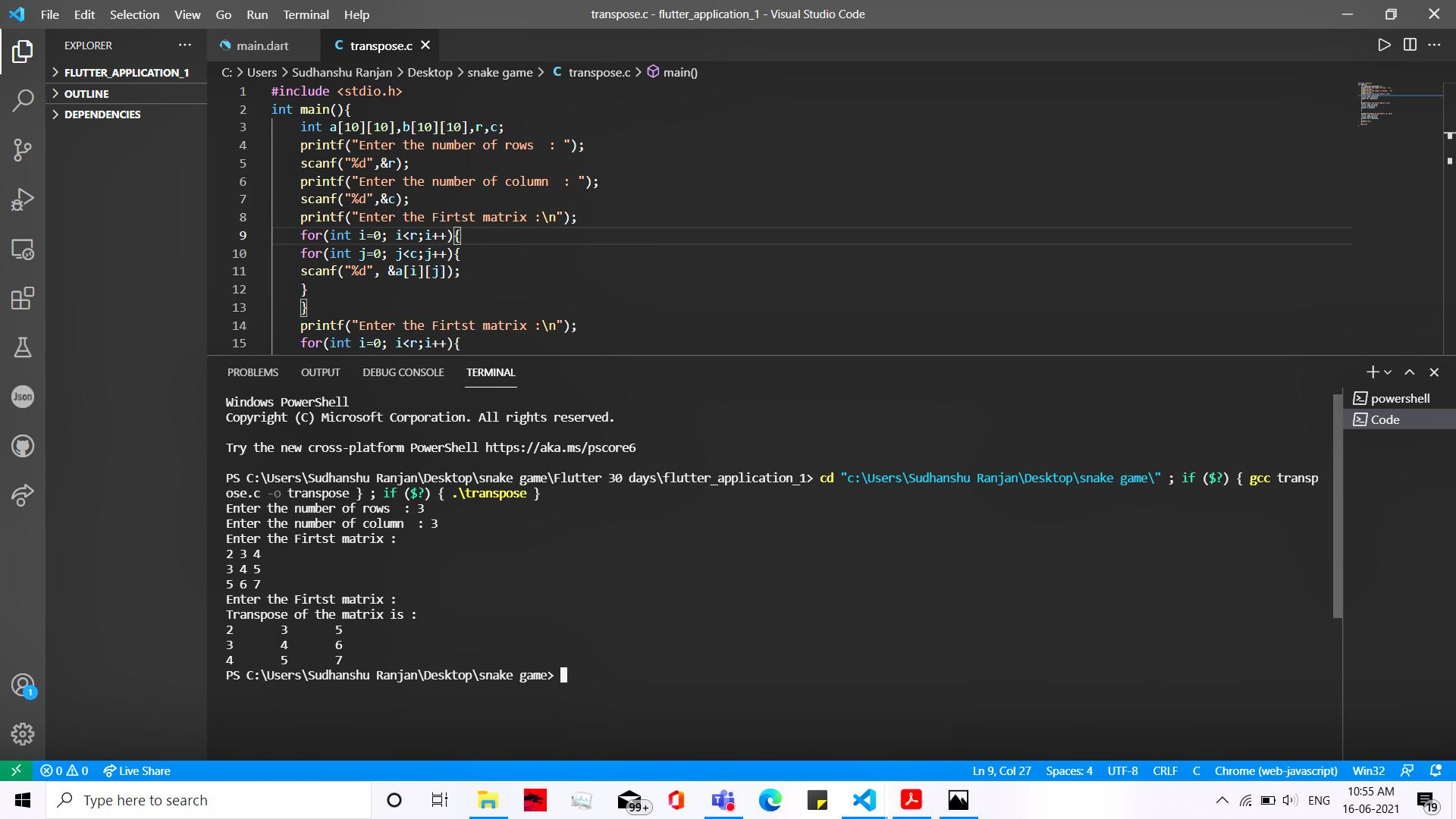
```c
#include <stdio.h>
int main(){
    int a[10][10],b[10][10],r,c;
    printf("Enter the number of rows  : ");
    scanf("%d",&r);
    printf("Enter the number of column  : ");
    scanf("%d",&c);
    printf("Enter the Firtst matrix :\n");
    for(int i=0; i<r;i++){
    for(int j=0; j<c;j++){
    scanf("%d", &a[i][j]);
    }
    }
    printf("Enter the Firtst matrix :\n");
    for(int i=0; i<r;i++){
    for(int j=0;j<c;j++){
    b[j][i] = a[i][j];
    }
    }

    printf("Transpose of the matrix is :\n");
    for(int i=0; i<r;i++){
    for(int j=0;j<c;j++){
    printf("%d\t",b[i][j]);
    }
    printf("\n");
    }
   return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
2       3       5
3       4       6
4       5       7
PS C:\Users\Sudhanshu Ranjan\Desktop\snake game>
```

powershell

Code


File Edit Selection View Go Run Terminal Help
transpose.c - flutter_application_1 - Visual Studio Code
EXPLORER
FLUTTER_APPLICATION_1
OUTLINE
DEPENDENCIES
main.dart
transpose.c
C: > Users > Sudhanshu Ranjan > Desktop > snake game > transpose.c > main()
#include <stdio.h>
int main(){
int a[10][10],b[10][10],r,c;
printf("Enter the number of rows : ");
scanf("%d",&r);
printf("Enter the number of column : ");
scanf("%d",&c);
printf("Enter the Firtst matrix :\n");
for(int i=0; i<r;i++){
for(int j=0; j<c;j++){
scanf("%d", &a[i][j]);
}
}
printf("Enter the Firtst matrix :\n");
for(int i=0; i<r;i++){
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\Sudhanshu Ranjan\Desktop\snake game\Flutter 30 days\flutter_application_1> cd "c:\Users\Sudhanshu Ranjan\Desktop\snake game\" ; if ($?) { gcc transpose.c -o transpose } ; if ($?) { .\transpose }
Enter the number of rows : 3
Enter the number of column : 3
Enter the Firtst matrix :
2 3 4
3 4 5
5 6 7
Enter the Firtst matrix :
Transpose of the matrix is :
2 3 5
3 4 6
4 5 7
PS C:\Users\Sudhanshu Ranjan\Desktop\snake game>
powershell
Code
Live Share
Ln 9, Col 27 Spaces: 4 UTF-8 CRLF C Chrome (web-javascript) Win32
Type here to search
ENG
10:55 AM
16-06-2021

Page No.:
Date :

Q.4. WAP in C to input two matrix of size m x m and p x q respectively. And then multiply them and display the result.

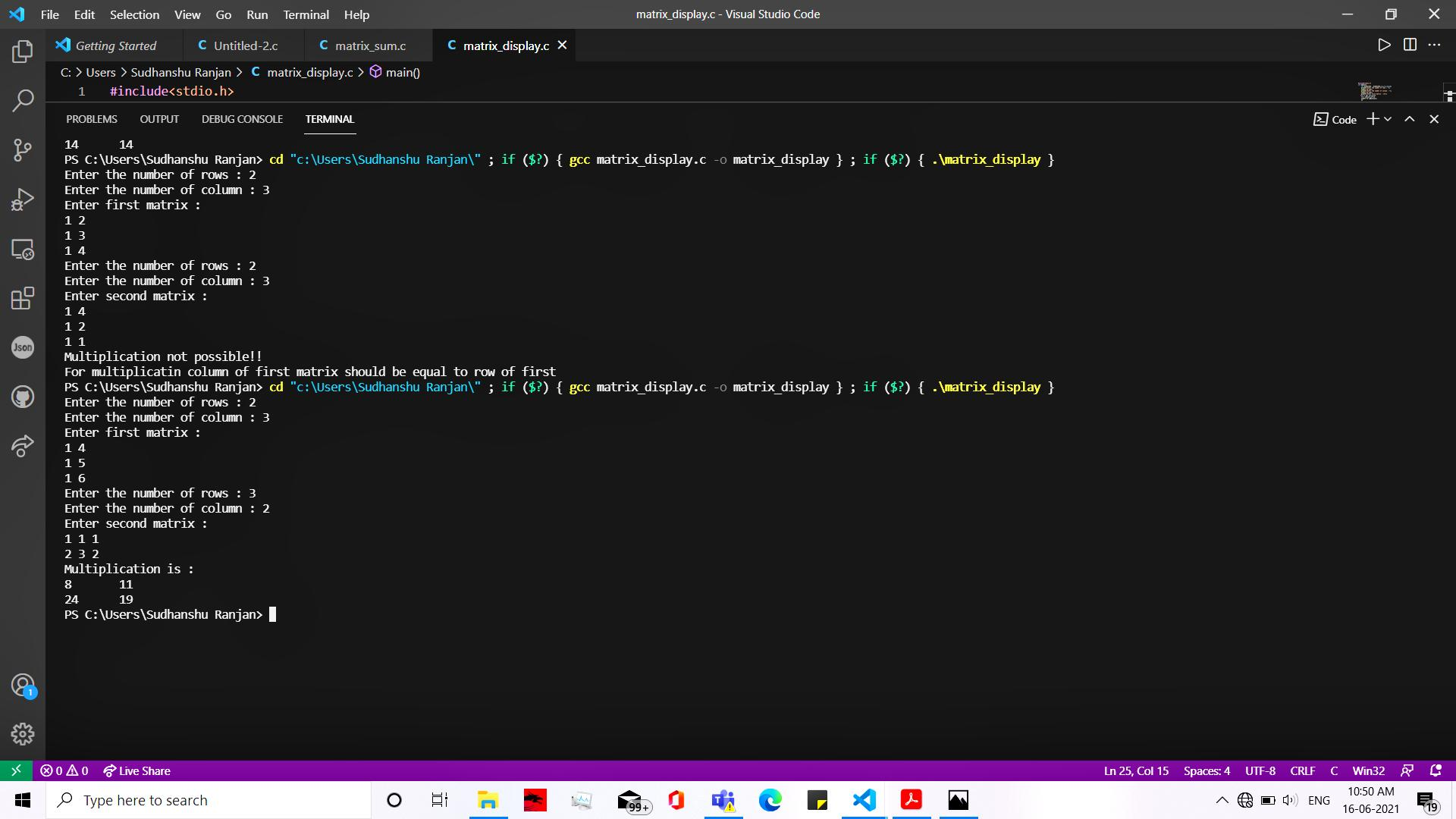
```
#include<stdio.h>
int main() {
int b[10][10], A[10][10], i,j, r, c, r1, c1);
Printf("Enter the number of rows : ");
scanf("%d", &r);
Printf("Enter the number of column : ");
Scanf("%d", &c);
Printf("Enter the matrix : \n");
 for (i=0; i<r; i++){
 for (j=0; j<c; j++){
 scanf("%d", &b[i][j]);
 }}
Printf("Enter the number of rows : ");
Scanf("%d", &r1);
Printf("Enter the number of Column : ");
scanf("%d", &c1);

Printf("Enter Second matrix : \n");
    for (i=0; i<r1; i++){
    for (j=0; j<c1; j++){
    scanf("%d", &A[i][j]);
     .
     }
     }
```

```
if (c != r1) {
Printf ("Multiplication not possible !! \n for multiplication
   column of first matrix should be equal to row
   of first");
   }
if (c == r1){
 int mul[r][c1];
  for (i=0 ; i<r ; i++){
  for (j=0 ; j<c1 ; j++) {
        mul[i][j] =0;

  for (int k=0; k<c ; k++){

  mul[i][j] = mul[i][j] + b[i]k] * A[k][j];
 }}}
Printf ("Multiplication is : \n");

 for (int i=0 ; i<r; i++) {
 for (int j=0 ; j<c1; j++) {
Printf ("%d \t", mul[i][j] );
 }
Printf ("\n");
}}
Return 0;
}
```

Getting Started | Untitled-2.c | matrix_sum.c | matrix_display.c

C: > Users > Sudhanshu Ranjan > matrix_display.c > main()

```c
#include<stdio.h>
int main(){
    int b[10][10] , A[10][10],i,j,r,c,r1,c1;
    printf("Enter the number of rows : ");
    scanf("%d",&r);
    printf("Enter the number of column : ");
    scanf("%d",&c);
    printf("Enter first matrix : \n");
   for( i =0; i<r;i++){
    for( j=0;j<c;j++){
    scanf("%d",&b[i][j]);
    }}
    printf("Enter the number of rows : ");
    scanf("%d",&r1);
    printf("Enter the number of column : ");
    scanf("%d",&c1);
    printf("Enter second matrix : \n");
    for(i =0; i<r1;i++){
    for( j=0;j<c1;j++){
    scanf("%d",&A[i][j]);
    }}
    if(c!=r1){
       printf("Multiplication not possible!! \nFor multiplicatin column of first matrix should be equal to row of first ");
    }
    if(c==r1){
    int mul[r][c];
    for(i = 0; i<r;i++){
    for( j = 0;j<c1;j++){
        mul[i][j]=0;
    for(int k=0;k<c;k++){
        mul[i][j] = mul[i][j] + b[i][k]*A[k][j];
    }}}
    printf("Multiplication is :\n");
    for(int i =0; i<r;i++){
    for(int j=0;j<c1;j++){
    printf("%d\t",mul[i][j]);
    }
    printf("\n");
    }}
    return 0;
    }
```


File Edit Selection View Go Run Terminal Help
matrix_display.c - Visual Studio Code
Getting Started
Untitled-2.c
matrix_sum.c
matrix_display.c
C: > Users > Sudhanshu Ranjan > matrix_display.c > main()
1 #include<stdio.h>
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code
14 14
PS C:\Users\Sudhanshu Ranjan> cd "c:\Users\Sudhanshu Ranjan\" ; if ($?) { gcc matrix_display.c -o matrix_display } ; if ($?) { .\matrix_display }
Enter the number of rows : 2
Enter the number of column : 3
Enter first matrix :
1 2
1 3
1 4
Enter the number of rows : 2
Enter the number of column : 3
Enter second matrix :
1 4
1 2
1 1
Multiplication not possible!!
For multiplicatin column of first matrix should be equal to row of first
PS C:\Users\Sudhanshu Ranjan> cd "c:\Users\Sudhanshu Ranjan\" ; if ($?) { gcc matrix_display.c -o matrix_display } ; if ($?) { .\matrix_display }
Enter the number of rows : 2
Enter the number of column : 3
Enter first matrix :
1 4
1 5
1 6
Enter the number of rows : 3
Enter the number of column : 2
Enter second matrix :
1 1 1
2 3 2
Multiplication is :
8 11
24 19
PS C:\Users\Sudhanshu Ranjan>
Live Share
Ln 25, Col 15 Spaces: 4 UTF-8 CRLF C Win32
Type here to search
ENG
10:50 AM
16-06-2021