

Q5:

```
#include <stdio.h>
```

```
int main() {
```

```
    int n, space;
```

```
    printf("Enter number of rows : ");
```

```
    scanf("%d", &n);
```

```
    int i,j;
```

```
    for (i = 1; i <= n; i++) {
```

```
        for (space = 1; space <= n - i; space++) {
```

```
            printf(" ");
```

```
        }
```

```
        for (j = 1; j <= i; j++) {
```

```
            printf("* ");
```

```
        }
```

```
        printf("\n");
```

```
    }
```

```
    for (i = n - 1; i >= 1; i--) {
```

```
        for (space = 1; space <= n - i; space++) {
```

```
            printf(" ");
```

```
        }
```

```
        for (j = 1; j <= i; j++) {
```

```
            printf("* ");
```

```
        }
```

```
        printf("\n");
```

```
}  
  
return 0;  
}
```

OUTPUT:

```
Enter number of rows : 6  
  *  
 * *  
* * *  
* * * *  
* * * * *  
* * * * * *  
* * * * *  
 * * * *  
  * * *  
   * *  
    *
```

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Q6:

```
#include <stdio.h>
```

```
int main() {
```

```
    int a[3][3], t[3][3];
```

```
    int i,j;
```

```
    printf("Enter elements of 3x3 matrix:\n");
```

```
    for(i=0;i<3;i++){
```

```
        for(j=0;j<3;j++){
```

```
            scanf("%d",&a[i][j]);
```

```
        }
```

```
    }
```

```
    for(i=0;i<3;i++){
```

```
        for(j=0;j<3;j++){
```

```
            t[j][i]=a[i][j];
```

```
        }
```

```
    }
```

```
    printf("Original Matrix:\n");
```

```
    for(i=0;i<3;i++){
```

```
        for(j=0;j<3;j++){
```

```
            printf("%d ",a[i][j]);
```

```
        }
```

```
        printf("\n");
```

```
    }
```

```
    printf("Transposed Matrix:\n");
```

```
    for(i=0;i<3;i++){
```

```
        for(j=0;j<3;j++){
```

```
            printf("%d ",t[i][j]);
```

```
    }  
    printf("\n");  
}  
return 0;  
}
```

OUTPUT:

```
Enter elements of 3x3 matrix:
```

```
3
```

```
4
```

```
5
```

```
6
```

```
7
```

```
8
```

```
9
```

```
10
```

```
11
```

```
Original Matrix:
```

```
3 4 5
```

```
6 7 8
```

```
9 10 11
```

```
Transposed Matrix:
```

```
3 6 9
```

```
4 7 10
```

```
5 8 11
```

```
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```

Q7:

```
#include <stdio.h>
```

```
int main() {  
    int a[3][3], b[3][3], c[3][3], sum;  
    int i,j;  
    printf("Enter first 3x3 matrix:\n");  
    for(i=0;i<3;i++){  
        for(j=0;j<3;j++){  
            scanf("%d",&a[i][j]);  
        }  
    }  
    printf("Enter second 3x3 matrix:\n");  
    for(i=0;i<3;i++){  
        for(j=0;j<3;j++){  
            scanf("%d",&b[i][j]);  
        }  
    }  
    int k;  
    for(i=0;i<3;i++){  
        for(j=0;j<3;j++){  
            sum=0;  
            for(k=0;k<3;k++){  
                sum+=a[i][k]*b[k][j];  
            }  
            c[i][j]=sum;  
        }  
    }  
}
```

Roll number: 25K-0892**Section: BCS-1K**

```
printf("Product Matrix:\n");  
for(i=0;i<3;i++){  
    for(j=0;j<3;j++){  
        printf("%d ",c[i][j]);  
    }  
    printf("\n");  
}  
return 0;  
}
```

OUTPUT:

```
Enter first 3x3 matrix:
```

```
1  
2  
3  
4  
5  
6  
7  
8  
9
```

```
Enter second 3x3 matrix:
```

```
1  
2  
3  
4  
5  
6  
7  
8  
9
```

```
Product Matrix:
```

```
30 36 42
```

```
66 81 96
```

```
102 126 150
```

```
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```

Q8:

```
#include <stdio.h>
```

```
int main() {
```

```
    int a[3][3], i, j, even=0, odd=0, pos=0, neg=0, zero=0;
```

```
    printf("Enter 3x3 matrix elements:\n");
```

```
    for(i=0;i<3;i++){
```

```
        for(j=0;j<3;j++){
```

```
            scanf("%d",&a[i][j]);
```

```
        }
```

```
    }
```

```
    for(i=0;i<3;i++){
```

```
        for(j=0;j<3;j++){
```

```
            if(a[i][j]%2==0){
```

```
                even++;
```

```
            }else {
```

```
                odd++;}
```

```
            if(a[i][j]>0){
```

```
                pos++;}
```

```
            else if(a[i][j]<0)
```

```
            {neg++;
```

```
            }else {
```

```
                zero++;}
```

```
        }
```

```
    }
```

```
    printf("Even: %d\nOdd: %d\nPositive: %d\nNegative: %d\nZeros: %d\n",even,odd,pos,neg,zero);
```

```
    return 0;
```

```
}
```


OUTPUT:

```
Enter 3x3 matrix elements:
```

```
0
```

```
-1
```

```
2
```

```
3
```

```
-4
```

```
0
```

```
5
```

```
6
```

```
7
```

```
Even: 5
```

```
Odd: 4
```

```
Positive: 5
```

```
Negative: 2
```

```
Zeros: 2
```

```
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```

Q9:

```
#include <stdio.h>
```

```
int main() {  
    int a[3][3], r[3][3], i, j;  
    printf("Enter 3x3 matrix:\n");  
    for(i=0;i<3;i++){  
        for(j=0;j<3;j++){  
            scanf("%d",&a[i][j]);  
        }  
    }  
    for(i=0;i<3;i++){  
        for(j=0;j<3;j++){  
            r[j][2-i]=a[i][j];  
        }  
    }  
    int same=1;  
    for(i=0;i<3;i++){  
        for(j=0;j<3;j++){  
            if(a[i][j]!=r[i][j]) {  
                same=0;  
            }  
        }  
    }  
    if(same) {  
        printf("Rotated matrix is same as original.\n");  
    }else{  
        printf("Rotated matrix is not same as original.\n");  
    }  
}
```

```
printf("Rotated Matrix:\n");  
for(i=0;i<3;i++){  
    for(j=0;j<3;j++){  
        printf("%d ",r[i][j]);  
    }  
    printf("\n");  
}  
return 0;  
}
```

OUTPUT:

```
Enter 3x3 matrix:  
1  
2  
3  
4  
5  
6  
7  
8  
9  
Rotated matrix is not same as original.  
Rotated Matrix:  
7 4 1  
8 5 2  
9 6 3
```

Q10:

```
#include <stdio.h>
```

```
int main() {  
    int n, num;  
    printf("Enter number of rows: ");  
    scanf("%d",&n);  
    int i,j;  
    for(i=0;i<n;i++){  
        for(j=0;j<=n-i;j++){  
            printf(" ");  
        }  
        num=1;  
        for(j=0;j<=i;j++){  
            printf("%d ",num);  
            num=num*(i-j)/(j+1);  
        }  
        printf("\n");  
    }  
    return 0;  
}
```

OUTPUT:

```
Enter number of rows: 4  
    1  
   1 1  
  1 2 1  
 1 3 3 1
```