Assignment-4

Code:

```c
// Q6. Write a program in C to make such a pattern like a right angle triangle with a number, which will repeat a number in a row.
#include <stdio.h>
int main()
{
    int r;
    printf("Enter Rows: ");
    scanf("%d",&r);
    for (int i=1;i<=r;i++)
    {
        for (int j=1;j<=i;j++)
            printf("%d",i);
        printf("\n");
    }
}
```

Output:

```
Enter Rows: 5
1
22
333
4444
55555
```

Code:

```c
// Q7 Write a program in C to make a pyramid pattern with
numbers increased by 1.
#include <stdio.h>
int main()
{
    int r;
    printf("Enter Rows: ");
    scanf("%d",&r);
    int a=r*(r+1)/2;
    int A[a];
    for (int i=0;i<a;i++)
        A[i]=i+1;
    int t=0;
    for (int i=0;i<r;i++)
    {
        for (int j=0;j<=i;j++)
        {
            printf("%d ",A[t]);
            t++;
        }
        printf("\n");
    }
}
```

Output:

```
Enter Rows: 4
1
2 3
4 5 6
7 8 9 10
```

Code:

```c
// Q8. Write a program in C to print Floyd's Triangle.
#include <stdio.h>
int main()
{
    int r;
    printf("Enter number of rows: ");
    scanf("%d",&r);
    for (int i=1;i<=r;i++)
    {
        int s=i%2;
        for (int j=1;j<=i;j++)
        {
            printf("%d ",s);
            s=1-s;
        }
        printf("\n");
    }
}
```

Output:

```
Enter number of rows: 6
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1
0 1 0 1 0 1
```

Code:

```c
// Q9. Write a program in C to display a pattern like a
diamond.
#include <stdio.h>
int main()
{
    int rows;

    printf("Enter the number of rows (odd number): ");
    scanf("%d", &rows);

    int mid = (rows + 1) / 2;
    for (int i = 1; i <= mid; i++)
    {
        for (int j = 1; j <= mid - i; j++)
            printf(" ");
        for (int j = 1; j <= 2 * i - 1; j++)
            printf("*");
        printf("\n");
    }
    for (int i = mid - 1; i >= 1; i--)
    {
        for (int j = 1; j <= mid - i; j++)
            printf(" ");
        for (int j = 1; j <= 2 * i - 1; j++)
            printf("*");
        printf("\n");
    }
    return 0;
}
```

Output:

```
Enter the number of rows (odd number): 7
   *
  ***
 *****
*******
 *****
  ***
   *
```

Code:

```c
// Q10.  Write a program in C to display a pattern like a
diamond.
#include <stdio.h>
void printPascalsTriangle(int rows)
{
    int arr[rows][rows];
    for (int i = 0; i < rows; i++)
    {
        for (int j = 0; j <= i; j++)
        {
            if (j == 0 || j == i)
                arr[i][j] = 1;
            else
                arr[i][j] = arr[i - 1][j - 1] + arr[i - 1]
                [j];
        }
    }
    for (int i = 0; i < rows; i++)
    {
        for (int space = 0; space < rows - i - 1; space++)
            printf(" ");
        for (int j = 0; j <= i; j++)
            printf("%d ", arr[i][j]);
        printf("\n");
    }
}
```

```c
int main() {
    int n;
    printf("Enter the number of rows for Pascal's Triangle:
    ");
    scanf("%d", &n);
    if (n <= 0)
        printf("Number of rows must be a positive integer.
        \n");
    else
        printPascalsTriangle(n);
    return 0;
}
```

Output:

```
Enter the number of rows for Pascal's Triangle: 5
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```