

## Assignment - 8 (Pattern problems)

### Program 1 -

```
#include <stdio.h>

int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 5 ; j++)
        {
            if(j <= i)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

### Output -

```
*
**
***
****
*****
```

---

### Program 2 -

```
#include <stdio.h>

int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 5 ; j++)
        {
            if(j >= 6 - i)
                printf("*");
            else
                printf(" ");
        }
    }
```

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

#### Output -

```
 *
**
***
****
*****
```

---

#### Program 3 -

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

```
int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 5 ; j++)
        {
            if(j <= 6 - i)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

#### Output -

```
*****
****
***
**
*
```

---

#### Program - 4

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

```
int main() {
```

```

int i , j;

for(i = 1 ; i <= 5 ; i++)
{
    for(j = 1 ; j <= 5 ; j++)
    {
        if(j >= i)
            printf("*");
        else
            printf(" ");
    }
    printf("\n");
}
return 0;
}

```

#### Output -

```

*****
****
***
**
*

```

---

#### Program 5 -

```

#include <stdio.h>

int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 9 ; j++)
        {
            if(j >= 6 - i && j <= 4 + i)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}

```

## Output -

```
      *
     ***
    *****
   ********
  **********
 **********
```

---

## Program 6 -

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

```
int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 9 ; j++)
        {
            if(j >= i && j <= 10 - i)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

## Output -

```
*****
*****
*****
***
*
```

---

### Program 7 -

```
#include <stdio.h>

int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 10 ; j++)
        {
            if(j <= 6 - i || j >= 5 + i)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

### Output -

```
*****
****  ****
***   ***
**    **
*     *
```

---

### Program 8 -

```
#include <stdio.h>

int main() {
    int i , j , k;

    for(i = 1 ; i <= 4 ; i++)
    {
        k = 1;
        for(j = 1 ; j <= 7 ; j++)
        {
            if(j >= 5 - i && j <= 3 + i) {
                printf("%d",k);
                j < 4 ? k++:k--;
            }
            else
                printf(" ");
        }
        printf("\n");
    }
}
```

```

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

```

**Output -**

```

1
121
12321
1234321

```

---

**Program 9 -**

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

```

int main() {
    int i , j , k;

    for(i = 1 ; i <= 4 ; i++)
    {
        k = 1;
        for(j = 1 ; j <= 7 ; j++)
        {
            if(j >= i && j <= 8 - i)
            {
                printf("%d",k);
                j < 4 ? k++:k--;
            }
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}

```

**Output -**

```

1234321
12321
121
1

```

---

### Program 10 -

```
#include <stdio.h>

int main() {
    int i , j , k;

    for(i = 1 ; i <= 4 ; i++)
    {
        k = 1;
        for(j = 1 ; j <= 7 ; j++)
        {
            if(j <= 5 - i || j >= 3 + i)
            {
                printf("%d",k);
                j < 4 ? k++:k--;
            }
            else
            {
                if(k == j)
                    k = j - 1;
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}
```

### Output -

```
1234321
123 321
12   21
1     1
```

---

### Program 11 -

```
#include <stdio.h>

int main() {
    int i , j , k;

    for(i = 1 ; i <= 5 ; i++)
    {
        k = 65;
```

```

    for(j = 1 ; j <= 9 ; j++)
    {
        if(j >= 6 - i && j <= 4 + i)
        {
            printf(" %c ",k);
            j < 5 ? k++:k--;
        }
        else
            printf("   ");
    }
    printf("\n");
}
return 0;
}

```

**Output -**

```

    A
   ABA
  ABCBA
 ABCDCBA
ABCDEDCBA

```

---

**Program 12 -**

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

```

int main() {
    int i , j , k;

    for(i = 1 ; i <= 4 ; i++)
    {
        k = 65;
        for(j = 1 ; j <= 7 ; j++)
        {
            if(j >= i && j <= 8 - i)
            {
                printf("%c",k);
                j < 4 ? k++:k--;
            }
            else
                printf(" ");
        }
        printf("\n");
    }
}

```



```
    return 0;
}
```

**Output -**  
**ABCD****CB****A**  
**ABC****B****A**  
**AB****A**  
**A**

---

### **Program 13 -**

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

```
int main()
{
    int i , j , k;

    for(i = 1 ; i <= 7 ; i++)
    {
        k = 65;
        for(j = 1 ; j <= 13 ; j++)
        {
            if(j <= 8 - i || j >= 6 + i)
            {
                printf("%c",k);
                j < 7 ? k++ : k--;
            }
            else
            {
                if(j == k - 64)
                {
                    k--;
                    printf(" ");
                }
            }
            printf("\n");
        }

        return 0;
    }
}
```

### Output -

```
ABCDEFGFGFEDCBA
ABCDEF FEDCBA
ABCDE   EDCBA
ABCD    DCBA
ABC     CBA
AB      BA
A       A
```

---

### Program 14 -

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

```
int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 5 ; j++)
        {
            if(i == 5 || j == 1 || j == i)
                printf(" * ");
            else
                printf("   ");
        }
        printf("\n\n");
    }
    return 0;
}
```

### Output -

```
*

*  *

*    *

*      *

* * * * *
```

---

### Program 15 -

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

```
int main() {
```

```

int i , j;

for(i = 1 ; i <= 5 ; i++)
{
    for(j = 1 ; j <= 5 ; j++)
    {
        if(i == 5 || j == 5 || j == 6 - i)
            printf(" * ");
        else
            printf("   ");
    }
    printf("\n\n");
}
return 0;
}

```

**Output -**

```

      *
    * *
  *   *
*     *
* * * * *

```

---

**Program 16 -**

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

```

int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 9 ; j++)
        {
            if(i == 5 || j == 6 - i || j == 4 + i)
                printf(" * ");
            else
                printf("   ");
        }
        printf("\n\n");
    }
}

```

```

    return 0;
}

```

**Output -**

```

      *
    *  *
  *      *
*          *
* * * * *

```

---

**Program 17 -**

```

#include <stdio.h>

int main() {
    int i , j;

    for(i = 1 ; i <= 5 ; i++)
    {
        for(j = 1 ; j <= 9 ; j++)
        {
            if(i == 1 || j == i || j == 10 - i)
                printf(" * ");
            else
                printf("   ");
        }
        printf("\n\n");
    }
    return 0;
}

```

### Output -

```
* * * * *
      *           *
    *           *
      *       *
        *   *
          *
```

### Program 18 -

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

```
int main() {
    int i , j , k = 0;

    for(i = 1 ; i <= 9 ; i++)
    {
        i <= 5 ? k++ : k--;
        for(j = 1 ; j <= 9 ; j++)
        {
            if(j >= 6 - k && j <= 4 + k)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

### Output -

```
 *
***
*****
*****
*****
*****
*****
***
 *
```

---

### Program 19 -

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

```
int main()
{
    int i , j , k = 0;
    for(i = 1 ; i <= 13 ; i++)
    {
        i <= 4 ? k++ : k--;
        for(j = 1 ; j <= 19 ; j++)
        {
            if(j >= 5 - k && j <= 15 + k)
            {
                if(i >= 1 && i <= 3)
                {
                    if(j >= 7 + i && j <= 13 - i)
                        printf(" ");
                    else
                        printf("*");
                }
                else if(i == 4)
                {
                    if(j == 7)
                        printf("M");
                    else if(j == 8)
                        printf("y");
                    else if(j == 9)
                        printf("S");
                    else if(j == 10)
                        printf("i");
                    else if(j == 11)
                        printf("r");
                    else if(j == 12)
                        printf("G");
                    else
                        printf("*");
                }
                else
                    printf("*");
            }
            else
                printf(" ");
        }
    }
}
```

```

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

```

Output -

```

    ****      ****
  *      *
*****      *****
*****      *****
*****MySirG*****
*****
*****
*****
*****
*****
*****
*****
*****
***
*
```