Competitive Coding – Patterns & Series – Level 2

1. WAP to print following pattern

```
* * * *

   * * * *

      * * * *

         * * * *
```

2. WAP to print following pattern

Input: rows = 5, cols = 8

Output:

```
* * * * * * * *

  *           *

    *           *

      *           *

        * * * * * * * *
```

3. WAP to print the trapezoid pattern

If N = 2
```
1*2*5*6
  3*4
```

If N = 4
```
1*2*3*4*17*18*19*20
  5*6*7*14*15*16
    8*9*12*13
      10*11
```

If N = 5

1*2*3*4*5*26*27*28*29*30
  6*7*8*9*22*23*24*25
    10*11*12*19*20*21
      13*14*17*18
        15*16

4. WAP to print 2*N Number of rows for input pattern

3
44
555
6666
555
44
3

5. Find the nth term of the series 1,1,2,3,4,9,8,27,16,81,32,243,….

6. WAP to print the given H Pattern

Given an integer N, the task is to print the Alphabet H Pattern as given below:

Input: N = 3

Output:

1 3

2 2

3 2 1

2 2

1 3

7. WAP to print given Z pattern

Input: N = 5

Output:

1 2 3 4 5

    4

   3

  2

1 2 3 4 5

7. WAP to print given N pattern

1   1

2 2   2

3 3   3

* * *

*   * *

*   * *

N   N

8. Given an integer N as input, the task is to print the Magical Pattern as given below:

N . . 3 2 1 2 3 . . N
. . . .
3 3 3 3 2 1 2 3 3 3 3
2 2 2 2 2 1 2 2 2 2 2
1 1 1 1 1 1 1 1 1 1 1
2 2 2 2 2 1 2 2 2 2 2
3 3 3 3 2 1 2 3 3 3 3
. . . .
N . . 3 2 1 2 3 . . N

9. WAP to find nth term of the series 5, 2, 19, 13, 41, …

Input: N = 4

Output:13

Input: N = 15

Output:272

10. WAP to find nth term of the series 1, 4, 15, 24, 45, 60, 91, 112, 153…

Input: n = 10

Output: 180

Input: n = 5

Output: 45

Solutions:

1. https://prepinsta.com/c-program/print-rhombus-star-pattern/

2. https://www.geeksforgeeks.org/program-to-print-mirrored-hollow-parallelogram/

3.

```c
int main()
{

int n=5,num=1,i=1,space=0,k=1,number=n,m,l,j;

//outer loop for total rows
for(i=0;i<n;i++)
{
        // print left spaces for a row
        for(j=1;j<=space;j++)
        {
                printf(" ");
        }

        // print left half triangle  for a row
        for(m=1;m<2*n-space;m++)
        {
                if(m%2==0)
                printf("%s","*");
                else
                printf("%d",num++);
        }

        // print last * in row
        printf("%s","&");

        // print right half triangle  for a row
        for(l=1;l<2*n-space;l++)
        {
                if(l%2==0)
                printf("%s","$");
                else
                {
                printf("%d",k+number*number);
                k++;
                }
        }

        // update values for next iteration
        number--;
        space=space+2;
        printf("\n");
}

return 0;
}
```

4. Do

5.

T_n = { $3^{(n/2 -1)}$ // even term, $2^{(n/2)}$ //odd term}, n=1 to N

Ex: T_5 = 4 i.e. $2^{(5/2)}$, T_6 = 9 i.e. $3^{(6/2 - 1)}$

6. https://www.geeksforgeeks.org/program-to-print-the-given-h-pattern/

7. https://www.geeksforgeeks.org/program-to-print-n-alphabet-using-the-number-pattern-from-1-to-n/

8. https://www.geeksforgeeks.org/magical-pattern/

9. https://www.geeksforgeeks.org/find-nth-term-of-the-series-5-2-13-41/

10. https://www.geeksforgeeks.org/program-to-find-nth-term-of-the-series-1-4-15-24-45-60-92/