Assignment – 3

Topic: Patterns with Numbers

Instructions:

1. Take input n from the user wherever required.

2. Do a **dry run on paper first** before coding.

3. **Identify:**

    1. **What does outer loop represent?**

    2. **Where do spaces reside?**

    3. **What common logic do the numbers align on?**

    4. **What does inner loop represent?**

4. **Do NOT copy from ChatGPT / friends — focus on understanding.**

Q1. Double Number Pyramid

For n = 4,

```
   1
  12
 123
1234
 123
  12
   1
```

Q2. Number Butterfly

For n = 4,

```
1       1
12      21
123   321
12344321
12344321
123   321
12      21
1       1
```

Q3. Cross (X) Number Pattern

For n = 5,

```
1   1
 2 2
  3
 4 4
5   5
```

Q4. Spiral Layer Pattern

For n = 3,

```
3 3 3 3 3
3 2 2 2 3
3 2 1 2 3
3 2 2 2 3
3 3 3 3 3
```

Q5. Pascal Triangle

For n = 5,

```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
```

Q6. Diamond with Continuous Numbers

For n = 4,

```
      1
    2  3
   4  5  6
 7  8  9  10
 11  12  13
   14  15
     16
```

Q7. Binary Diamond

For n = 4,

```
   1
  0  1
 1  0  1
0  1  0  1
 1  0  1
  0  1
   1
```

Submit:

1. Code

2. Dry run for n = 3

3. Short explanation:

   ° What does outer loop represent?

   ° Where do spaces reside?

   ° What common logic do the numbers align on?

   ° What does inner loop represent?

YENJOYY !!