day-009-29-jan-loops-and-pattern-programs

1. Write a Program(WAP) to print Alphabets A, B, C, D, E, F, G, H, using pattern programming logic
2. Write a program to print triangle using star pattern programming logic
3. WAP to print

4. Write a program to print PW SKILLS using pattern programming logic.
5. Write a program to print your Full Name using pattern programming logic

1.

Question_01.java

```java
public class Question_01 {

  // Number of lines for the alphabet's pattern
  static int height = 5;

  // Number of character width in each line
  static int width = (2 * height) - 1;

  // Function to print the pattern of 'A'
  static void printA() {
    int n = width / 2, i, j;
    for (i = 0; i < height; i++) {
      for (j = 0; j <= width; j++) {
        if (
          j == n ||
          j == (width - n) ||
          (i == height / 2 && j > n && j < (width - n))
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
      n--;
    }
  }
```

```
  // Function to print the pattern of 'B'
  static void printB() {
    int i, j, half = (height / 2);
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < width; j++) {
        if (
          (i == 0 || i == height - 1 || i == half) && j <
(width - 2)
        ) System.out.printf("*"); else if (
          j == (width - 2) && !(i == 0 || i == height - 1 || i
== half)
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'C'
  static void printC() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < (height - 1); j++) {
        if (i == 0 || i == height - 1) System.out.printf("*");
else continue;
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'D'
  static void printD() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if ((i == 0 || i == height - 1) && j < height - 1)
System.out.printf(
          "*"
        ); else if (
          j == height - 1 && i != 0 && i != height - 1
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'E'
  static void printE() {
    int i, j;
```

```
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if (
          (i == 0 || i == height - 1) || (i == height / 2 && j
<= height / 2)
        ) System.out.printf("*"); else continue;
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'F'
  static void printF() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if ((i == 0) || (i == height / 2 && j <= height / 2))
System.out.printf(
          "*"
        ); else continue;
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'G'
  static void printG() {
    int i, j;
    width--;
    for (i = 0; i < height; i++) {
      for (j = 0; j < width; j++) {
        if (
          (i == 0 || i == height - 1) && (j == 0 || j == width
- 1)
        ) System.out.printf(" "); else if (j == 0)
System.out.printf(
          "*"
        ); else if (i == 0 && j <= height)
System.out.printf("*"); else if (
          i == height / 2 && j > height / 2
        ) System.out.printf("*"); else if (
          i > height / 2 && j == width - 1
        ) System.out.printf("*"); else if (
          i == height - 1 && j < width
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }
```

```
  // Function to print the pattern of 'H'
  static void printH() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if ((j == height - 1) || (i == height / 2))
System.out.printf(
          "*"
        ); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  public static void main(String[] args) {
    printA();
    System.out.println();
    printB();
    System.out.println();
    printC();
    System.out.println();
    printD();
    System.out.println();
    printE();
    System.out.println();
    printF();
    System.out.println();
    printG();
    System.out.println();
    printH();
  }
}
```

Output :

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

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

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

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

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

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

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

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

2.

Question_02.java

```java
public class Question_02 {
  public static void main(String args[]) {
    //i for rows and j for columns
    //row denotes the number of rows you want to print
    int i, j, row = 6;
    //outer loop for rows
    for (i = 0; i < row; i++) {
      //inner loop for columns
      for (j = 0; j <= i; j++) {
```

```
        //prints stars
        System.out.print("* ");
      }
      //throws the cursor in a new line after printing each
line
      System.out.println();
    }
  }
}
```

Output :

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

3.

Question_03.java

```
public class Question_03
{
  public static void main(String[] args) {
      int n = 14;
      for(int i=0;i<=n;i++)
      {
          for(int j=0;j<=n;j++)
          {

if(i==0&&j<(n-1)||i==(n-1)&&j<(n-1)||j==0&&i<(n-1)||j==(n-1)&&
i<=(n-1)||i==1&&j!=(n-1)/2&&i<(n/4)&&j<(n-1)||

i==2&&j!=(n-1)/2&&j<(n-1)&&j!=5&&j!=7||i==3&&j!=(n-1)/2&&j<(n-
1)&&j!=6&&j!=5&&j!=4&&j!=7&&j!=8

||i==4&&j!=(n-1)/2&&j<(n-1)&&j!=3&&j!=5&&j!=4&&j!=7&&j!=8&&j!=
9||

i==5&&j!=(n-1)/2&&j<(n-1)&&j!=3&&j!=5&&j!=4&&j!=7&&j!=8&&j!=9&
&j!=2&&j!=10||

i==6&&j!=(n-1)/2&&j<(n-1)&&j!=3&&j!=5&&j!=4&&j!=7&&j!=8&&j!=9&
&j!=2&&j!=10&&j!=1&&j!=11)
                {
                    System.out.print("*");
                }
```

```
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

Output :

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

4.

Question_04.java

```
public class Question_04 {

  // Number of lines for the alphabet's pattern
static int height = 5;

// Number of character width in each line
static int width = (2 * height) - 1;

// Function to find the absolute value
// of a number D
static int abs(int d)
{
    return d < 0 ? -1 * d : d;
}

  // Function to print the pattern of 'P'
```

```
  static void printP() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if ((i == 0 || i == height / 2) && j < height - 1)
System.out.printf(
            "*"
        ); else if (
          i < height / 2 && j == height - 1 && i != 0
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'W'
  static void printW() {
    int i, j, counter = height / 2;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j <= height; j++) {
        if (j == height) System.out.printf("*"); else if (
          (i >= height / 2) && (j == counter || j == height -
counter - 1)
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      if (i >= height / 2) {
        counter++;
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'S'
  static void printS() {
    int i, j;
    for (i = 0; i < height; i++) {
      for (j = 0; j < height; j++) {
        if ((i == 0 || i == height / 2 || i == height - 1))
System.out.printf(
            "*"
        ); else if (i < height / 2 && j == 0)
System.out.printf("*"); else if (
          i > height / 2 && j == height - 1
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }
```

```
  // Function to print the pattern of 'K'
  static void printK() {
    int i, j, half = height / 2, dummy = half;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j <= half; j++) {
        if (j == abs(dummy)) System.out.printf("*"); else
System.out.printf(
            " "
        );
      }
      System.out.printf("\n");
      dummy--;
    }
  }

  // Function to print the pattern of 'I'
  static void printI() {
    int i, j;
    for (i = 0; i < height; i++) {
      for (j = 0; j < height; j++) {
        if (i == 0 || i == height - 1) System.out.printf("*");
else if (
            j == height / 2
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'L'
  static void printL() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j <= height; j++) {
        if (i == height - 1) System.out.printf("*"); else
System.out.printf(
            " "
        );
      }
      System.out.printf("\n");
    }
  }

  public static void main(String[] args) {
    printP();
    printW();
    System.out.println();
    printS();
    printK();
```

```
    printI();
    printL();
    printL();
    printS();
  }
}
```

Output :

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

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

```
*****
```

5.

Question_05.java

```
public class Question_05 {

  // Number of lines for the alphabet's pattern
  static int height = 5;

  // Number of character width in each line
  static int width = (2 * height) - 1;

  // Function to print the pattern of 'A'
  static void printA() {
    int n = width / 2, i, j;
    for (i = 0; i < height; i++) {
      for (j = 0; j <= width; j++) {
        if (
          j == n ||
          j == (width - n) ||
          (i == height / 2 && j > n && j < (width - n))
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
      n--;
    }
  }

  // Function to print the pattern of 'D'
  static void printD() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if ((i == 0 || i == height - 1) && j < height - 1)
System.out.printf(
            "*"
        ); else if (
          j == height - 1 && i != 0 && i != height - 1
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }
```

```
  // Function to print the pattern of 'H'
  static void printH() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < height; j++) {
        if ((j == height - 1) || (i == height / 2))
System.out.printf(
          "*"
        ); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'L'
  static void printL() {
    int i, j;
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j <= height; j++) {
        if (i == height - 1) System.out.printf("*"); else
System.out.printf(
          " "
        );
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'R'
  static void printR() {
    int i, j, half = (height / 2);
    for (i = 0; i < height; i++) {
      System.out.printf("*");
      for (j = 0; j < width; j++) {
        if ((i == 0 || i == half) && j < (width - 2))
System.out.printf(
          "*"
        ); else if (
          j == (width - 2) && !(i == 0 || i == half)
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'T'
  static void printT() {
    int i, j;
```

```
    for (i = 0; i < height; i++) {
      for (j = 0; j < height; j++) {
        if (i == 0) System.out.printf("*"); else if (
          j == height / 2
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  // Function to print the pattern of 'U'
  static void printU() {
    int i, j;
    for (i = 0; i < height; i++) {
      if (i != 0 && i != height - 1) System.out.printf(
        "*"
      ); else System.out.printf(" ");
      for (j = 0; j < height; j++) {
        if (((i == height - 1) && j >= 0 && j < height - 1))
System.out.printf(
            "*"
        ); else if (
          j == height - 1 && i != 0 && i != height - 1
        ) System.out.printf("*"); else System.out.printf(" ");
      }
      System.out.printf("\n");
    }
  }

  public static void main(String[] args) {
    printR();
    printA();
    printH();
    printU();
    printL();
    System.out.println();
    printD();
    printU();
    printT();
    printT();
    printA();
  }
}
```

Output :

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

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

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

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

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

[redacted]