Logic can be developed by doing programs on different “patterns”

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| https://static.takeuforward.org/wp/uploads/2023/01/Screenshot-2023-01-23-000952.png | class Main {  static void pattern1(int N)  {  // This is the outer loop which will loop for the rows.  for (int i = 0; i < N; i++)  {  // This is the inner loop which here, loops for the columns  // as we have to print a rectangular pattern.  for (int j = 0; j < N; j++)  {  System.out.print("\* ");  }  // As soon as N stars are printed, we move to the  // next row and give a line break otherwise all stars  // would get printed in 1 line.  System.out.println();  }  }  public static void main(String[] args) {    // Here, we have taken the value of N as 5.  // We can also take input from the user.  int N = 5;  pattern1(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2023/02/image-6.png | class Main {  static void pattern2(int N){  for (int i = 0; i < N; i++){  for (int j = 0; j <= i; j++){  System.out.print("\* ");  }  System.out.println();  }  }  public static void main(String[] args) {  int N = 5;  pattern2(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2022/08/P3.png | class Main {  static void pattern3(int N){  for (int i = 1; i < N+1; i++){  for (int j = 1; j <= i; j++){  System.out.print(j);  }  System.out.println();  }  }  public static void main(String[] args) {  int N = 5;  pattern2(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2022/08/P4.png | class Main {  static void pattern4(int N){  for (int i = 1; i < N+1; i++){  for (int j = 1; j <= i; j++){  System.out.print(i);  }  System.out.println();  }  }  public static void main(String[] args) {  int N = 5;  pattern2(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2022/08/P5.png | class Main {  static void pattern5(int N){  for (int i = 0; i < N; i++){  for (int j = N; j > i; j--){  System.out.print("\* ");  }  System.out.println();  }  }  public static void main(String[] args) {  int N = 5;  pattern2(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2022/08/P6.png | class Main {  static void pattern6(int N){  for (int i = 0; i < N; i++){  for (int j = N; j > i; j--){  System.out.print((N+1)-j);  }  System.out.println();  }  }  public static void main(String[] args) {  int N = 5;  pattern2(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2022/08/P7.png | In the first row (i=0) there are 4 spaces, 1 star, then again 4 spaces.  In the second row (i=1) there are 3 spaces, 3 stars, then again 3 spaces  **so there are N-i-1 spaces, 2\*i+1 stars, and then again N-i-1 spaces for each row** **where i is the row index.**  We thus simply run 3 inner loops first for printing the spaces, then the stars, and then the spaces again.  class Main {  static void pattern7(int N){  for (int i = 0; i < N; i++)  {  for (int j =0; j<N-i-1; j++){  System.out.print(" ");  }  for(int j=0;j< 2\*i+1;j++){    System.out.print("\*");  }  for (int j =0; j<N-i-1; j++){  System.out.print(" ");  }  System.out.println();  }  }  public static void main(String[] args) {  int N = 5;  pattern7(N);  }  } |
| https://static.takeuforward.org/wp/uploads/2022/08/P8.png | In the first row (i=0) there are 0 spaces, 9 stars, then again 0 spaces.  In the second row (i=1) there is 1 space, 7 stars, then again 1 space  **so there are i spaces, 2\*N - (2\*i+1) stars, and then again i space for each row where i is the row index.**  We thus simply run 3 inner loops, first for printing the spaces, then the stars, and then the spaces again. |