Task 3

a)

public class PatternExample {

public static void printPyramid(int n) {

for (int i = 1; i <= n; i++) {

// Print spaces

for (int j = 1; j <= n - i; j++) {

System.out.print(" ");

}

// Print stars

for (int j = 1; j <= 2 \* i - 1; j++) {

System.out.print("\*");

}

System.out.println();

}

}

public static void main(String[] args) {

int n = 5;

System.out.println("Pyramid Pattern:");

printPyramid(n);

}

}

b)

public class PalindromeCheck {

// Check if string is palindrome

public static boolean isPalindrome(String str) {

int left = 0, right = str.length() - 1;

while (left < right) {

if (str.charAt(left) != str.charAt(right)) {

return false;

}

left++;

right--;

}

return true;

}

// Check number palindrome

public static boolean isPalindromeNumber(int num) {

String str = String.valueOf(num);

return isPalindrome(str);

}

public static void main(String[] args) {

String word1 = "madam";

String word2 = "hello";

int num1 = 121;

int num2 = 123;

System.out.println(word1 + " -> " + isPalindrome(word1)); // true

System.out.println(word2 + " -> " + isPalindrome(word2)); // false

System.out.println(num1 + " -> " + isPalindromeNumber(num1)); // true

System.out.println(num2 + " -> " + isPalindromeNumber(num2)); // false

}

}

c)

public class PasswordValidator {

public static boolean isValidPassword(String password) {

if (password.length() < 8) return false;

boolean hasUpper = false;

boolean hasLower = false;

boolean hasDigit = false;

boolean hasSpecial = false;

for (char ch : password.toCharArray()) {

if (Character.isUpperCase(ch)) hasUpper = true;

else if (Character.isLowerCase(ch)) hasLower = true;

else if (Character.isDigit(ch)) hasDigit = true;

else hasSpecial = true;

}

return hasUpper && hasLower && hasDigit && hasSpecial;

}

public static void main(String[] args) {

String pass1 = "Password123!";

String pass2 = "weakpass";

String pass3 = "Pass123";

String pass4 = "Strong#2025";

System.out.println(pass1 + " -> " + isValidPassword(pass1)); // true

System.out.println(pass2 + " -> " + isValidPassword(pass2)); // false

System.out.println(pass3 + " -> " + isValidPassword(pass3)); // false

System.out.println(pass4 + " -> " + isValidPassword(pass4)); // true

}

}