Tutorial 3

Question 1

public class Tut3Q1 {  
 public static void main(String[] args) {  
 // Using for loop  
 System.out.println("Using for loop:");  
 for (int i = 0; i <= 14; i += 2) {  
 if (i == 6 || i == 8) {  
 continue;  
 }  
 System.out.println(i);  
 }  
  
 // Using while loop  
 System.out.println("Using while loop:");  
 int j = 0;  
 while (j <= 14) {  
 if (j == 6 || j == 8) {  
 j += 2;  
 continue;  
 }  
 System.out.println(j);  
 j += 2;  
 }  
 }  
}

Question 2

public class Tut3Q2 {  
 public static void main(String[] args) {  
 *printPattern1*();  
 System.*out*.println();  
 *printPattern2*();  
 }  
  
 public static void printPattern1() {  
 for (int i = 1; i <= 5; i++) {  
 for (int j = 1; j <= i; j++) {  
 System.*out*.print(i);  
 }  
 System.*out*.println();  
 }  
 }  
  
 public static void printPattern2() {  
 int rows = 5;  
 int stars = 1;  
 int spaces = 4;  
  
 for (int i = 1; i <= rows; i++) {  
 // Print spaces  
 for (int j = 1; j <= spaces; j++) {  
 System.*out*.print(" ");  
 }  
  
 // Print stars  
 for (int j = 1; j <= stars; j++) {  
 System.*out*.print("\*");  
 }  
  
 System.*out*.println();  
 spaces--;  
 stars += 2;  
 }  
 }  
}

Question 3

import java.util.\*;  
public class Tut3Q3 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 // Get the number of times to print the letter  
 System.*out*.print("Enter a number: ");  
 int n = scanner.nextInt();  
  
 // Get the letter to print  
 System.*out*.print("Enter a letter: ");  
 char letter = scanner.next().charAt(0);  
  
 System.*out*.print("Output: ");  
  
 // Print the letter n times  
 int i = 0;  
 while (i < n) {  
 System.*out*.print(letter);  
 i++;  
 }  
  
 scanner.close();  
 }  
}

Question 4

import java.util.\*;  
public class Tut3Q4 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 System.*out*.print("Enter a positive integer: ");  
 int number = scanner.nextInt();  
  
 int factorial = 1;  
  
 if (number == 0) {  
 System.*out*.println("Factorial of 0 is 1.");  
 } else {  
 System.*out*.print("Factorial of " + number + " = ");  
  
 for (int i = number; i >= 1; i--) {  
 if (i == number) {  
 System.*out*.print(i);  
 } else {  
 System.*out*.print(" x " + i);  
 }  
 factorial \*= i;  
 }  
  
 System.*out*.println(" = " + factorial);  
 }  
  
 scanner.close();  
 }  
}

Question 5

import java.util.\*;  
public class Tut3Q5 {  
  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 double number\_1 = 0;  
 double number\_2 = 0;  
 String operator = "";  
 boolean validInput = false;  
  
 // Input validation for the first number  
 while (!validInput) {  
 System.*out*.print("Enter the first number: ");  
 if (scanner.hasNextDouble()) {  
 number\_1 = scanner.nextDouble();  
 validInput = true;  
 } else {  
 System.*out*.println("Invalid input. Please enter a valid number.");  
 scanner.next(); // Clear the invalid input  
 }  
 }  
  
 validInput = false;  
  
 // Input validation for the second number  
 while (!validInput) {  
 System.*out*.print("Enter the second number: ");  
 if (scanner.hasNextDouble()) {  
 number\_2 = scanner.nextDouble();  
 validInput = true;  
 } else {  
 System.*out*.println("Invalid input. Please enter a valid number.");  
 scanner.next(); // Clear the invalid input  
 }  
 }  
  
 validInput = false;  
  
 // Input validation for the operator  
 while (!validInput) {  
 System.*out*.print("Enter the operator (+, -, \*, /): ");  
 operator = scanner.next();  
  
 if (operator.equals("+") || operator.equals("-") || operator.equals("\*") || operator.equals("/")) {  
 validInput = true;  
 } else {  
 System.*out*.println("Invalid operator. Please enter one of the following operators: +, -, \*, /");  
 }  
 }  
  
 // Performing the calculation and handling division by zero  
 try {  
 double result = 0;  
 switch (operator) {  
 case "+":  
 result = number\_1 + number\_2;  
 break;  
 case "-":  
 result = number\_1 - number\_2;  
 break;  
 case "\*":  
 result = number\_1 \* number\_2;  
 break;  
 case "/":  
 if (number\_2 == 0) {  
 throw new ArithmeticException("Division by zero is not allowed.");  
 }  
 result = number\_1 / number\_2;  
 break;  
 }  
 System.*out*.println("The result is: " + result);  
 } catch (ArithmeticException e) {  
 System.*out*.println(e.getMessage());  
 }  
  
 scanner.close();  
 }  
}