SRM INSTITUTE OF

SCIENCE &TECHNOLOGY

Kattankulathur

Chennai

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| Name | * **GAURAV GUPTA** |
| Subject | * Advanced Programming practice |
| Section | * W2 |
| Roll No. | * RA2211026010284 |
| Title | * Assignment   Tutorial 1 |

**Assignment**

**Tutorial 01**

**Q1) Write a JAVA program to find those numbers which are divisible by 8 and multiple of 5, between 1000 and 2000 (both included)**

**CODE:**

**public class DivisibleAndMultiple{**

**public static void main(String[] args){**

**System.out.println("Numbers that are divisible by 8 and multiple of 5 between 1000 and 2000 ( including ) are:");**

**for(int n=1000;n<=2000;n++){**

**if(n%8==0 && n%5==0){**

**System.out.println(n+ " ");**

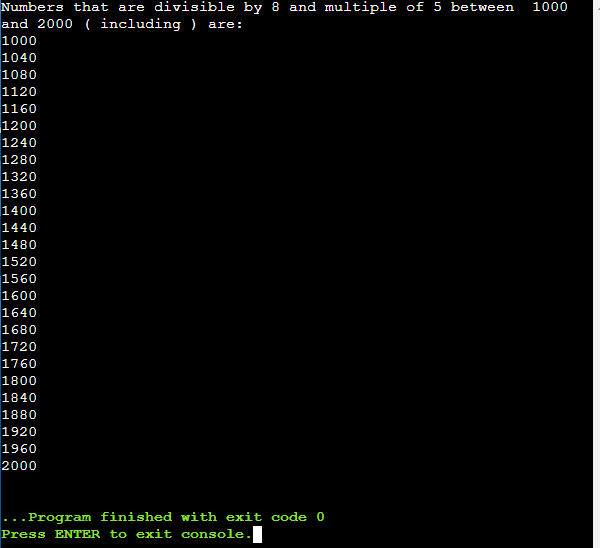
**}**

**}**

**}**

**}**

**Output:**

****

**Q2) Write a JAVA program to guess a number between 1 to 9. Note: User is prompted to enter a guess. If the user guesses wrong then the prompt appears again until the guess is correct, on successful guess, user will get a “Well guessed!” message, and the program will exit.**

**CODE:**

**import java.util.Scanner;**

**import java.util.Random;**

**public class GuessNumber {**

**public static void main(String[] args) {**

**Scanner scanner = new Scanner(System.in);**

**Random random = new Random();**

**int targetNumber = random.nextInt(9) + 1;**

**int userGuess;**

**System.out.println("Guess a number between 1 and 9.");**

**do {**

**System.out.print("Enter your guess: ");**

**userGuess = scanner.nextInt();**

**if (userGuess == targetNumber) {**

**System.out.println("Well guessed!");**

**break;**

**} else {**

**System.out.println("Try again.");**

**}**

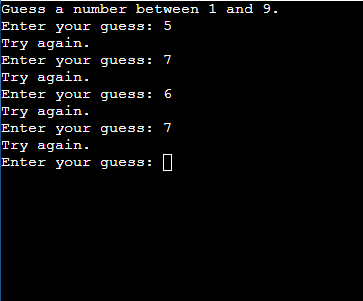
**} while (true);**

**scanner.close();**

**}**

**}**

**OUTPUT**

****

**Q3) Write a JAVA program to construct the following pattern, using a nested for loop.**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**\* \* \* \***

**\* \* \***

**\* \***

**\***

**CODE:**

**public class Pattern {**

**public static void main(String[] args) {**

**int rows = 5; // Number of rows in the pattern**

**// Print upper half of the pattern**

**for (int i = 1; i <= rows; i++) {**

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

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

**}**

**System.out.println();**

**}**

**// Print lower half of the pattern**

**for (int i = rows - 1; i >= 1; i--) {**

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

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

**}**

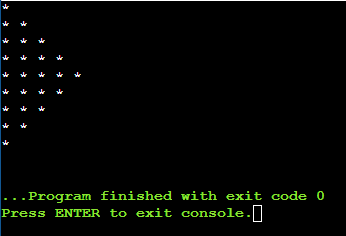
**System.out.println();**

**}**

**}**

**}**

**OUTPUT:**

****

**Q4) Write a JAVA program that accepts a word from the user and reverse**

**it. (should not use any functions)**

**CODE:**

**import java.util.Scanner;**

**public class ReverseWord {**

**public static void main(String[] args) {**

**Scanner scanner = new Scanner(System.in);**

**System.out.print("Enter a word: ");**

**String word = scanner.nextLine();**

**String reversedWord = reverseWord(word);**

**System.out.println("Reversed word: " + reversedWord);**

**scanner.close();**

**}**

**public static String reverseWord(String word) {**

**char[] charArray = word.toCharArray();**

**int left = 0;**

**int right = charArray.length - 1;**

**while (left < right) {**

**char temp = charArray[left];**

**charArray[left] = charArray[right];**

**charArray[right] = temp;**

**left++;**

**right--;**

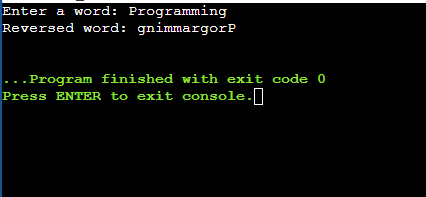
**}**

**return new String(charArray);**

**}**

**}**

**OUTPUT:**

****

**Q5) Write a JAVA program that accepts a string and calculate the number**

**of digits and letters.**

**CODE**

**import java.util.Scanner;**

**public class CountDigitsAndLetters {**

**public static void main(String[] args) {**

**Scanner scanner = new Scanner(System.in);**

**System.out.print("Enter a string: ");**

**String input = scanner.nextLine();**

**int digitCount = 0;**

**int letterCount = 0;**

**for (int i = 0; i < input.length(); i++) {**

**char ch = input.charAt(i);**

**if (Character.isDigit(ch)) {**

**digitCount++;**

**} else if (Character.isLetter(ch)) {**

**letterCount++;**

**}**

**}**

**System.out.println("Number of digits: " + digitCount);**

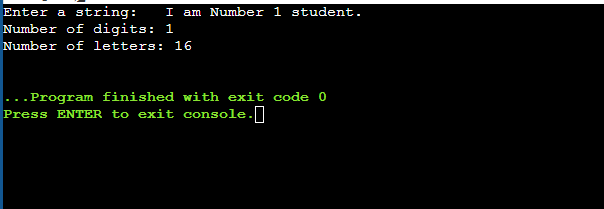
**System.out.println("Number of letters: " + letterCount);**

**scanner.close();**

**}**

**}**

**OUTPUT:**

****

**Q6) Write a JAVA program to check the validity of password input by**

**users.**

**Validation:**

**● At least 1 letter between [a-z] and 1 letter between [A-Z].**

**● At least 1 number between [0-9].**

**● At least 1 character from [$#@].**

**● Minimum length 6 characters.**

**● Maximum length 16 characters.**

**CODE:**

**import java.util.Scanner;**

**public class PasswordValidation {**

**public static void main(String[] args) {**

**Scanner scanner = new Scanner(System.in);**

**System.out.print("Enter a password: ");**

**String password = scanner.nextLine();**

**if (isValidPassword(password)) {**

**System.out.println("Password is valid.");**

**} else {**

**System.out.println("Password is invalid.");**

**}**

**scanner.close();**

**}**

**public static boolean isValidPassword(String password) {**

**if (password.length() < 6 || password.length() > 16) {**

**return false;**

**}**

**boolean hasLower = false;**

**boolean hasUpper = false;**

**boolean hasDigit = false;**

**boolean hasSpecial = false;**

**String specialChars = "$#@";**

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

**if (Character.isLowerCase(ch)) {**

**hasLower = true;**

**} else if (Character.isUpperCase(ch)) {**

**hasUpper = true;**

**} else if (Character.isDigit(ch)) {**

**hasDigit = true;**

**} else if (specialChars.indexOf(ch) != -1) {**

**hasSpecial = true;**

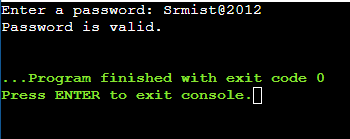
**}**

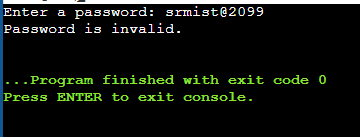
**}**

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

**}**

**}**

**OUTPUT:**

****

**Q7) Write a JAVA program to find numbers between 100 and 400 (both**

**included) where each digit of a number is an even number. The numbers**

**obtained should be printed in a comma-separated sequence.**

**CODE:**

**public class EvenDigitNumbers {**

**public static void main(String[] args) {**

**System.out.println("Numbers between 100 and 400 with all even digits:");**

**boolean first = true;**

**for (int number = 100; number <= 400; number++) {**

**if (hasOnlyEvenDigits(number)) {**

**if (!first) {**

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

**}**

**System.out.print(number);**

**first = false;**

**}**

**}**

**System.out.println();**

**}**

**public static boolean hasOnlyEvenDigits(int number) {**

**while (number > 0) {**

**int digit = number % 10;**

**if (digit % 2 != 0) {**

**return false;**

**}**

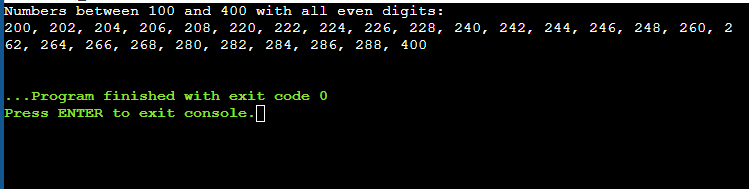
**number /= 10;**

**}**

**return true;**

**}**

**}**

**OUTPUT:  
  
**

**Q8) Write a JAVA program to convert month name to a number of days.**

**CODE:**

**import java.util.Scanner;**

**public class MonthToDaysConverter {**

**public static void main(String[] args) {**

**Scanner scanner = new Scanner(System.in);**

**System.out.print("Enter the name of a month: ");**

**String monthName = scanner.nextLine();**

**int days = getDaysInMonth(monthName);**

**if (days != -1) {**

**System.out.println(monthName + " has " + days + " days.");**

**} else {**

**System.out.println("Invalid month name.");**

**}**

**scanner.close();**

**}**

**public static int getDaysInMonth(String monthName) {**

**String[] months = {**

**"January", "February", "March", "April",**

**"May", "June", "July", "August",**

**"September", "October", "November", "December"**

**};**

**int[] daysInMonths = {**

**31, 28, 31, 30,**

**31, 30, 31, 31,**

**30, 31, 30, 31**

**};**

**for (int i = 0; i < months.length; i++) {**

**if (months[i].equalsIgnoreCase(monthName)) {**

**return daysInMonths[i];**

**}**

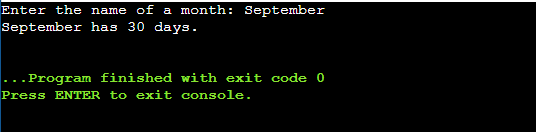
**}**

**return -1; // Invalid month name**

**}**

**}**

**OUTPUT:**

****

**Q9) Write a JAVA program to sum of two given integers. However, if the**

**sum is between 105 to 200 it will return 200.**

**CODE:**

**import java.util.Scanner;**

**public class SumWithRangeCheck {**

**public static void main(String[] args) {**

**Scanner scanner = new Scanner(System.in);**

**System.out.print("Enter the first integer: ");**

**int num1 = scanner.nextInt();**

**System.out.print("Enter the second integer: ");**

**int num2 = scanner.nextInt();**

**int sum = num1 + num2;**

**if (sum >= 105 && sum <= 200) {**

**sum = 200;**

**}**

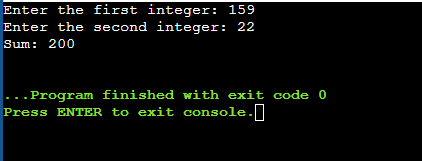
**System.out.println("Sum: " + sum);**

**scanner.close();**

**}**

**}**

**OUTPUT:**

****

**Q 10) Write a JAVA program to construct the following pattern, using a nested loop number.**

**Expected Output:**

**999999999**

**88888888**

**7777777**

**666666**

**55555**

**4444**

**333**

**22**

**1**

**CODE:**

**public class NestedLoopPattern {**

**public static void main(String[] args) {**

**int rows = 9; // Number of rows in the pattern**

**for (int i = rows; i >= 1; i--) {**

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

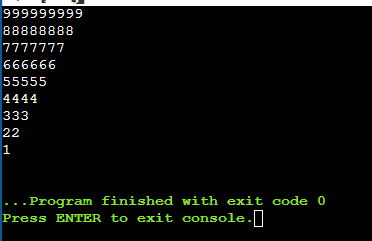
**System.out.print(i);**

**}**

**System.out.println();**

**}**

**}**

**}**

**OUTPUT:**