TRITOY'S QUESTION SHEET ON BASIC JAVA

BASIC TO ADVANCED LEVEL

BASIC SHEET:

1- Write a Java program to print 'Hello' on screen and then print your name on a separate line.
2- Write a Java program to print the sum of two numbers.
3- Write a Java program to divide two numbers and print on the screen.
4- Write a Java program to print the result of the following operations.
5- Write a Java program that takes two numbers as input and display the product of two numbers.
6- Write a Java program to print the sum (addition), multiply, subtract, divide and remainder of two numbers.
7- Write a Java program that takes a number as input and prints its multiplication table up to 10.
8- Write a Java program to display the following pattern.

Sample Pattern :

```
   J    a   v     v  a
   J   a a   v   v  a a
J  J  aaaaa   V V  aaaaa
 JJ  a     a   V  a     a
```

9- Write a Java program to compute the specified expressions and print the output.
Test Data:
((25.5 * 3.5 - 3.5 * 3.5) / (40.5 - 4.5))

10- Write a Java program to compute a specified formula.
Specified Formula :
4.0 * (1 - (1.0/3) + (1.0/5) - (1.0/7) + (1.0/9) - (1.0/11))

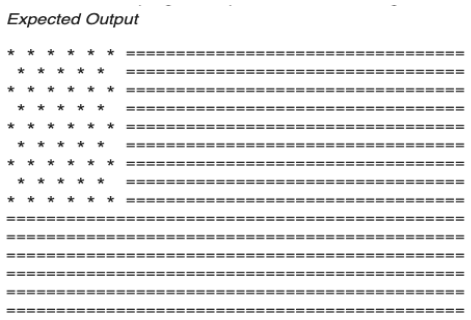
11- Write a Java program to print the area and perimeter of a circle.
Test Data:
Radius = 7.5

12- Write a Java program that takes three numbers as input to calculate and print the average of the numbers.

13- Write a Java program to print the area and perimeter of a rectangle.
Test Data:
Width = 5.5 Height = 8.5

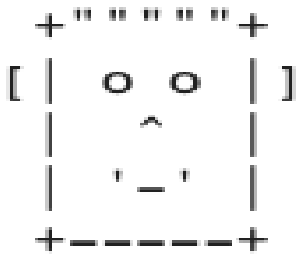
14- Write a Java program to print an American flag on the screen.

Expected Output



15- Write a Java program to swap two variables.

16- Write a Java program to print a face.



17- Write a Java program to add two binary numbers.

18- Write a Java program to multiply two binary numbers.

19- Write a Java program to convert a decimal number to binary number.

20- Write a Java program to convert a decimal number to hexadecimal number.

21- Write a Java program to convert a decimal number to octal number.

22- Write a Java program to convert a binary number to decimal number.

23- Write a Java program to convert a binary number to hexadecimal number.

24- Write a Java program to convert a binary number to a Octal number.

25- Write a Java program to convert a octal number to a decimal number.

26- Write a Java program to convert a octal number to a binary number.

27- Write a Java program to convert a octal number to a hexadecimal number.
28- Write a Java program to convert a hexadecimal to a decimal number.
29- Write a Java program to convert a hexadecimal to a binary number.
30- Write a Java program to convert a hexadecimal to a octal number.
31- Write a Java program to check whether Java is installed on your computer.

Expected Output

```
Java Version: 1.8.0_71
Java Runtime Version: 1.8.0_71-b15
Java Home: /opt/jdk/jdk1.8.0_71/jre
Java Vendor: Oracle Corporation
Java Vendor URL: http://Java.oracle.com/
Java Class Path: .
```

32- Write a Java program to compare two numbers.
33- Write a Java program and compute the sum of the digits of an integer.
34- Write a Java program to compute the area of a hexagon.
35- Write a Java program to compute the area of a polygon.
Area of a polygon = (n*s^2)/(4*tan(π/n))
where n is n-sided polygon and s is the length of a side
36- Write a Java program to compute the distance between two points on the surface of earth.
Distance between the two points [(x1,y1) & (x2,y2)]
d = radius * arc cos(sin(x1) * sin(x2) + cos(x1) * cos(x2) * cos(y1 - y2))
Radius of the earth r = 6371.01 Kilometres
37- Write a Java program to reverse a string.
38- Write a Java program to count the letters, spaces, numbers and other characters of an input string.
39- Write a Java program to create and display unique three-digit number using 1, 2, 3, 4. Also count how many three-digit numbers are there.
40- Write a Java program to list the available character sets in charset objects.
41- Write a Java program to print the ascii value of a given character.
42- Write a Java program to input and display your password.
43- Write a Java program to print the following string in a specific format (see the output).

Sample Output

```
Twinkle, twinkle, little star,
```

```
 How I wonder what you are!
       Up above the world so high,
       Like a diamond in the sky.
Twinkle, twinkle, little star,
 How I wonder what you are
```

44- Write a Java program that accepts an integer (n) and computes the value of n+nn+nnn.

45- Write a Java program to find the size of a specified file.

Sample Output:

```
/home/students/abc.txt  : 0 bytes
/home/students/test.txt : 0 bytes
```

46- Write a Java program to display the system time.

Sample Output:

```
Current Date time: Fri Jun 16 14:17:40 IST 2017
```

47- Write a Java program to display the current date time in specific format.

Sample Output:

```
Now: 2017/06/16 08:52:03.066
```

48- Write a Java program to print the odd numbers from 1 to 99. Prints one number per line.

49- Write a Java program to accept a number and check the number is even or not. Prints 1 if the number is even or 0 if the number is odd.

50- Write a Java program to print numbers between 1 to 100 which are divisible by 3, 5 and by both.

51- Write a Java program to convert a string to an integer in Java.

52- Write a Java program to calculate the sum of two integers and return true if the sum is equal to a third integer.

53- Write a Java program that accepts three integers from the user and return true if the second number is greater than first number and third number is greater than second number. If "abc" is true second number does not need to be greater than first number.

54- Write a Java program that accepts three integers from the user and return true if two or more of them (integers) have the same rightmost digit. The integers are non-negative.

55- Write a Java program to convert seconds to hour, minute and seconds.

56- Write a Java program to find the number of integers within the range of two specified numbers and that are divisible by another number.

For example x = 5, y=20 and p =3, find the number of integers within the range x..y and that are divisible by p i.e. { i :x ≤ i ≤ y, i mod p = 0 }

57- Write a Java program to accepts an integer and count the factors of the number.

58- Write a Java program to capitalize the first letter of each word in a sentence.
59- Write a Java program to convert a given string into lowercase.
60- Write a Java program to find the penultimate (next to last) word of a sentence.
61- Write a Java program to reverse a word.
62- Write a Java program that accepts three integer values and return true if one of them is 20 or more and less than the substractions of others.
63- Write a Java program that accepts two integer values from the user and return the larger values. However if the two values are the same, return 0 and return the smaller value if the two values have the same remainder when divided by 6.
64- Write a Java program that accepts two integer values between 25 to 75 and return true if there is a common digit in both numbers.
65- Write a Java program to calculate the modules of two numbers without using any inbuilt modulus operator.
66- Write a Java program to compute the sum of the first 100 prime numbers.
67- Write a Java program to insert a word in the middle of the another string.
Insert "Tutorial" in the middle of "Python 3.0", so result will be Python Tutorial 3.0
68- Write a Java program to create a new string of 4 copies of the last 3 characters of the original string. The length of the original string must be 3 and above.
69- Write a Java program to extract the first half of a string of even length.
70- Write a Java program to create a string in the form short_string + long_string + short_string from two strings. The strings must not have the same length.
Test Data: Str1 = Python
Str2 = Tutorial
71- Write a Java program to create the concatenation of the two strings except removing the first character of each string. The length of the strings must be 1 and above.
Test Data: Str1 = Python
Str2 = Tutorial
72- Write a Java program to create a new string taking first three characters from a given string. If the length of the given string is less than 3 use "#" as substitute characters.
Test Data: Str1 = " "
73- Write a Java program to create a new string taking first and last characters from two given strings. If the length of either string is 0 use "#" for missing character.

Test Data: str1 = "Python"
str2 = " "

74- Write a Java program to test if 10 appears as either the first or last element of an array of integers. The length of the array must be greater than or equal to 2.

75- Write a Java program to test if the first and the last element of an array of integers are same. The length of the array must be greater than or equal to 2.

76- Write a Java program to test if the first or the last element of two array of integers are same. The length of the array must be greater than or equal to 2.

77- Write a Java program to create a new array of length 2 from two arrays of integers with three elements and the new array will contain the first and last elements from the two arrays.
Test Data: array1 = 50, -20, 0
array2 = 5, -50, 10

78- Write a Java program to test that a given array of integers of length 2 contains a 4 or a 7

79- Write a Java program to rotate an array (length 3) of integers in left direction.

80- Write a Java program to get the larger value between first and last element of an array (length 3) of integers .

81- Write a Java program to swap the first and last elements of an array (length must be at least 1) and create a new array.

82- Write a Java program to find the largest element between first, last, and middle values from an array of integers (even length).

83- Write a Java program to multiply corresponding elements of two arrays of integers.

84- Write a Java program to take the last three characters from a given string and add the three characters at both the front and back of the string. String length must be greater than three and more.

85- Write a Java program to check if a string starts with a specified word.
Sample Data: string1 = "Hello how are you?"

86- Write a Java program start with an integer n, divide n by 2 if n is even or multiply by 3 and add 1 if n is odd, repeat the process until n = 1.

87- Write a Java program than read an integer and calculate the sum of its digits and write the number of each digit of the sum in English.

88- Write a Java program to get the current system environment and system properties.

89- Write a Java program to check whether a security manager has already been established for the current application or not.

90- Write a Java program to get the value of the environment variable PATH, TEMP, USERNAME.

91- Write a Java program to measure how long some code takes to execute in nanoseconds.
92- Write a Java program to count the number of even and odd elements in a given array of integers.
93- Write a Java program to test if an array of integers contains an element 10 next to 10 or an element 20 next to 20, but not both.
94- Write a Java program to rearrange all the elements of a given array of integers so that all the odd numbers come before all the even numbers.
95- Write a Java program to create an array (length # 0) of string values. The elements will contain "0", "1", "2" … through ... n-1.
96- Write a Java program to check if there is a 10 in a given array of integers with a 20 somewhere later in the array.
97- Write a Java program to check if an array of integers contains a specified number next to each other or there are two same specified numbers separated by one element.
98- Write a Java program to check if the value 20 appears three times and no 20's are next to each other in a given array of integers.
99- Write a Java program to check if a specified number appears in every pair of adjacent element of a given array of integers.
100- Write a Java program to count the two elements of two given arrays of integers with same length, differ by 1 or less.
101- Write a Java program to check if the number of 10 is greater than number to 20's in a given array of integers.
102- Write a Java program to check if a specified array of integers contains 10's or 30's.
103- Write a Java program to create a new array from a given array of integers, new array will contain the elements from the given array after the last element value 10.
104- Write a Java program to create a new array from a given array of integers, new array will contain the elements from the given array before the last element value 10.
105- Write a Java program to check if a group of numbers (l) at the start and end of a given array are same.
106- Write a Java program to create a new array that is left shifted from a given array of integers.
107- Write a Java program to check if an array of integers contains three increasing adjacent numbers.
108- Write a Java program to add all the digits of a given positive integer until the result has a single digit.
109- Write a Java program to form a staircase shape of n coins where every k-th row must have exactly k coins.
110- Write a Java program to check whether a given integer is a power of 4 or not.
Given num = 64, return true. Given num = 6, return false.

111- Write a Java program to add two numbers without using any arithmetic operators.
Given x = 10 and y = 12; result = 22

112- Write a Java program to compute the number of trailing zeros in a factorial.
7! = 5040, therefore the output should be 1

113- Write a Java program to merge two given sorted array of integers and create a new sorted array.

114- Write a Java program to given a string and an offset, rotate string by offset (rotate from left to right).

115- Write a Java program to check if a positive number is a palindrome or not.

116- Write a Java program which iterates the integers from 1 to 100. For multiples of three print "Fizz" instead of the number and print "Buzz" for the multiples of five. When number is divided by both three and five, print "fizz buzz".

117- Write a Java program to compute the square root of a given integer.

118- Write a Java program to get the first occurrence (Position starts from 0.) of a string within a given string.

119- Write a Java program to get the first occurrence (Position starts from 0.) of an element of a given array.

120- Write a Java program that searches a value in an m x n matrix.

121- Write a Java program to reverse a given linked list.

122- Write a Java program to find a contiguous subarray with largest sum from a given array of integers.

123- Write a Java program to find the subarray with smallest sum from a given array of integers.

124- Write a Java program to find the index of a value in a sorted array. If the value does not find return the index where it would be if it were inserted in order.

125- Write a Java program to get the preorder traversal of its nodes' values of a given a binary tree.

126- Write a Java program to get the inorder traversal of its nodes' values of a given a binary tree.

127- Write a Java program to get the Postorder traversal of its nodes' values of a given a binary tree.

128- Write a Java program to calculate the median of a given unsorted array of integers.
Original array: [10, 2, 38, 22, 38, 23]
Median of the said array of integers: 30
Original array: [10, 2, 38, 23, 38, 23, 21]
Median of the said array of integers: 23

129- Write a Java program to find a number that appears only once in a given array of integers, all numbers occur twice.

130- Write a Java program to find the maximum depth of a given a binary tree.

131- Write a Java program to find the new length of a given sorted array where each element appear only once (remove the duplicates).

132- Write a Java program to find the new length of a given sorted array where duplicate elements appeared at most twice.
Original array: [1, 1, 2, 3, 3, 3, 4, 5, 6, 7, 7, 7, 7]
The length of the original array is: 13
After removing duplicates, the new length of the array is: 10

133- Write a Java program to find a path from top left to bottom in right direction which minimizes the sum of all numbers along its path.
Note: Move either down or right at any point in time.

134- Write a Java program to find the distinct ways you can climb to the top (n steps to reach to the top) of stairs. Each time you can either climb 1 or 2 steps.

135- Write a Java program to remove duplicates from a sorted linked list.
Original List with duplicate elements:
12->12->13->14->15->15->16->17->17
After removing duplicates from the said list:
12->13->14->15->16->17

136- Write a Java program to find possible unique paths from top-left corner to bottom-right corner of a given grid (m x n).
Note: You can move either down or right at any point in time.

137- Write a Java program to find possible unique paths considering some obstacles, from top-left corner to bottom-right corner of a given grid (m x n).
Note: You can move either down or right at any point in time and an obstacle and empty space is marked as 1 and 0 respectively in the grid.
Sample grid:

```
int[][] obstacle_Grid ={
{0, 0, 0},
{0, 1, 0},
{0, 0, 0},
};
```

Sample Output: Unique paths from top-left corner to bottom-right corner of the said grid (considering some obstacles): 2

138- Write a Java program to find all of the longest word in a given dictionary.

139- Write a Java program to get the index of the first number and the last number of a subarray where the sum of numbers is zero from a given array of integers.
Original Array : [1, 2, 3, -6, 5, 4]
Index of the subarray of the said array where the sum of numbers is zero: [0, 3]

140- Write a Java program to merge all overlapping Intervals from a given a collection of intervals.

141- Write a Java program to check if a given string has all unique characters.
Sample Output: Original String : xyyz
String has all unique characters: false

142- Write a Java program to check if two given strings are anagrams or not.
According to Wikipedia "An anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once. For example, the word anagram can be rearranged into nag a ram, or the word binary into brainy."

143- Write a Java program to merge two given sorted lists.

144- Write a Java program to remove all occurrences of a specified value in a given array of integers and return the new length of the array.

145- Write a Java program to remove the nth element from the end of a given list.

146- Write a Java program to convert an sorted array to binary search tree. Maintain minimal height of the tree.

147- Write a Java program to find the number of bits required to flip to convert two given integers.

148- Write a Java program to find the index of the first unique character in a given string, assume that there is at least one unique character in the string.

149- Write a Java program to check if a given string is a permutation of another given string.

150- Write a Java program to test if a binary tree is a subtree of another binary tree.

NOTE : More questions will be added soon as BasicJavasheet-2 and 3
Question sheet on DSA and computer subjects will be uploaded in due course of time.
Although solution to questions is available on internet but I will be uploading solutions to all questions in due course of time

Please do follow : https://github.com/TritoyMohanty-99
On github for more updates