



ITTalents Training Camp Season 9

Test 1

Introduction to programming

Name: _____

Points on theory: _____ of 100 %

Points on practice tasks: _____ of 100 %

Time available to complete the test: 3 hours.

Minimum passing score: 50% on theory and 50% on practice tasks.

Theory

1: (25%) What is the difference between stack and heap? How are the reference types stored in memory? What is stack frame? What is garbage collector?

2: (25%) How do you define function? How to call a function? How are parameters passed if they are arrays? What is recursion?

3: (25%) Describe common operations with strings in JavaScript. How to change the value of string variable?

4: (25%) Describe the bitwise operators you know and how they work. How to invert a bit in given position in variable?

Practice tasks

1: (25%) Write a simulation of throwing 2 dices by 2 players in turns. You have to read endlessly two numbers between 1..6 separated by space. If the input is incorrect alert

“invalid pair” to the user. The program should stop when sum of all dices for some player is greater than 100. Finally, output the sums for both players.

Example (program output is in bold):

6 4

1 2

5 6

-1 3

Invalid pair!

4 4

6 6

2 3

.....

Player 1 : 102

Player 2 : 95

2: (25%) Write a **function** that takes a variable that holds some text. The program must output all the words that are part of other words in the same text. For example: ‘me’ is part of ‘men’.

Example :

Test is **for** testing before someone **fail** in failure **one** time

Output:

Test for fail one

3: (25%) Write a function that by given array of integers, and a positive numbers X and Y, returns the sum of all integers that are **NOT** between X and Y. Use recursion!

4: (25%) Write a method that by given 2D labyrinth represented as 2D array filled with 'W' for walls and ' ' (space) for empty cells, returns the number of steps to exit the labyrinth. You cannot pass through walls and you can move only up, down, left or right. If there is no way to escape the labyrinth, then 'NO WAY' should be returned as a result.