

## Sitecore Technical Internship Program

### Technical tasks

#### Task #1. Simple figures

##### I point.

You must create a set of classes for the domain area of simple geometric figures. There are Point, Line and Circle

##### +II points

All geometric figures should have methods for Move and Rotate. Methods implementation for each figure is required.

##### +III points

There is an additional figure named Aggregation and it may contain random number of random figures, for example 2 Points and a Circle, or 5 Lines and a Point. When Aggregation moves all its figures move the same way. When Aggregation rotates all its figures rotate the same way. Write down the Aggregation implementation including the class definition and all methods.

**Total available points 6**

#### Task #2. Palindrome

A **palindrome** is a word, number, phrase, or other sequence of characters which reads the same backward as forward, such as *madam* or *racecar* or the number *10201*.

##### I point

Consider there are 2 strings. InputString and a TrashSymbolString. Please implement the method to check if the InputString is palindrome, if all trash symbols are ignored. Symbol case should be ignored.

##### Example 1:

InputString: a@b!!b\$a

TrashSymbolsString: !@\$

Result should be: true

##### Example 2:

InputString: ?Aa#c

TrashSymbolsString: #?

Result should be: false

##### +II points

During the implementation TrashSymbols are not removed from the InputString and no new strings are created.

##### +III points

InputString is scanned only once

**Total available points 6**

### Task #3. Minefield

#### III points

There is a minefield of size  $n \times m$  where random fields having a bomb. The safe path always exists. There is a dog named Totoshka which can smell if any adjacent field has a bomb. Create an algorithm which would allow Totoshka to pass through the minefield.

Example

✓ - safe path

X - bomb

↘ (°) ↗

	✓	X	X	
X	X	✓	X	
	X	X	✓	X
X		X	✓	X
	X	✓	X	X

#### +VI points

There is a girl Ally who is following Totoshka. Ally always stand on the field where Totoshka was before. Totoshka and Ally cannot stand on the same field. Create an algorithm for Totoshka and Ally to pass through the minefield.

#### +XII points

Write down the C# implementation of the previous task.

**Total available points 21**