Exercise on TypeScript Fundamentals

1. Write a TypeScript program to display the current day and time in the following format. *Sample*

   Output : Today is : Friday.
   Current time is : 4 PM : 50 : 22

2. Write a TypeScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7.

3. Write a TypeScript program to compute the sum of the two given integers. If the two values are same, then returns triple their sum.

4. Write a TypeScript program to remove a character at the specified position of a given string and return the new string.

5. Write a TypeScript program to create a new string from a given string taking the last 3 characters and added at both the front and back. The string length must be 3 or more.

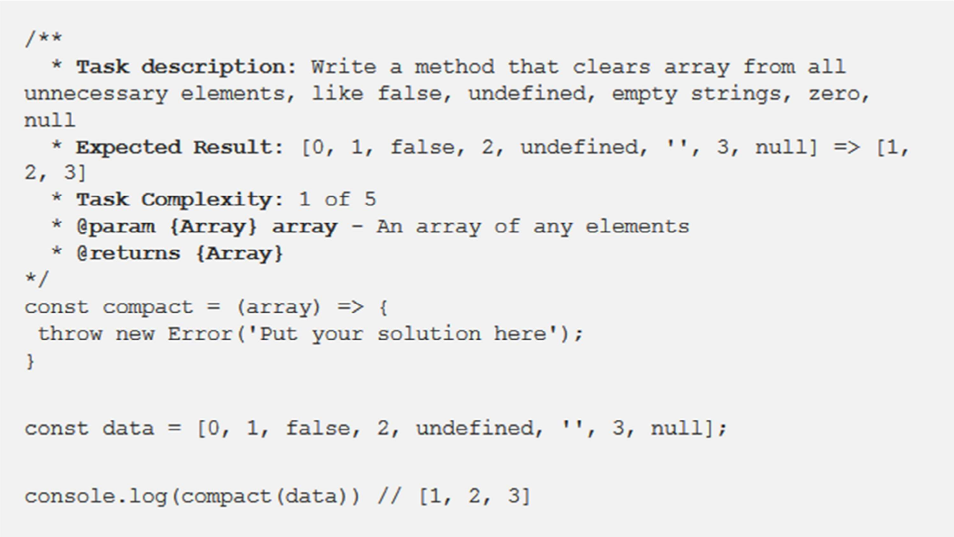
6. Write a TypeScript program to check the total marks of a student in various examinations. The student will get A+ grade if the total marks are in the range 89..100 inclusive, if the examination is "Final-exam." the student will get A+ grade and total marks must be greater than or equal to 90. Return true if the student get A+ grade or false otherwise.

Exercise on TypeScript Type Declarations Arrays and Type Erasures

1. Write a TypeScript program to create a String variable to Hold an animal Value in it. And Together with Type Aliases and Union Types you get a enum-like behavior.

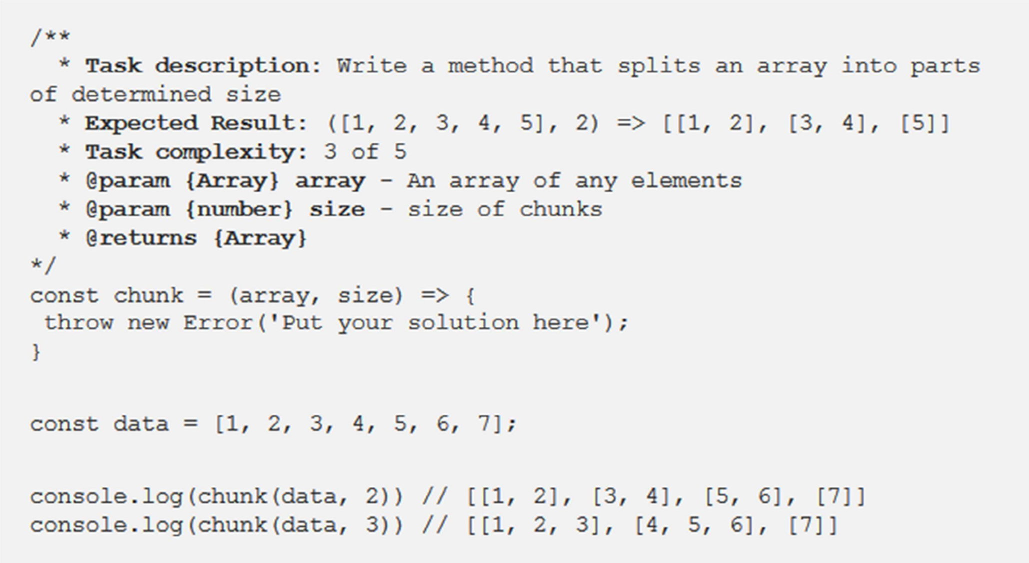
2. Write a TypeScript program to create a
   a. Tuple [Array Type with known and possibly different types].
   b. A Intersection Type combines the member of two or more types. [Eg : To Create SwissArmyKnife containing Features of Knife, BottleOpener and ScrewDriver.

3. Write a TypeScript program
   a. To sort the items of an array.
   Sample -array : var arr1 = [3, 8, 7, 6, 5, -4, 3, 2, 1];
   Sample Output : -4,-3,1,2,3,5,6,7,8
   b. Write a method that clears array from all unnecessary elements, like false, undefined, empty strings, zero, null



```
/**
  * Task description: Write a method that clears array from all
unnecessary elements, like false, undefined, empty strings, zero,
null
  * Expected Result: [0, 1, false, 2, undefined, '', 3, null] => [1,
2, 3]
  * Task Complexity: 1 of 5
  * @param {Array} array - An array of any elements
  * @returns {Array}
*/
const compact = (array) => {
 throw new Error('Put your solution here');
}


const data = [0, 1, false, 2, undefined, '', 3, null];


console.log(compact(data)) // [1, 2, 3]
```

   c. Write a method that returns a duplicate-free array.
   d. Write a method that splits an array into parts of determined size

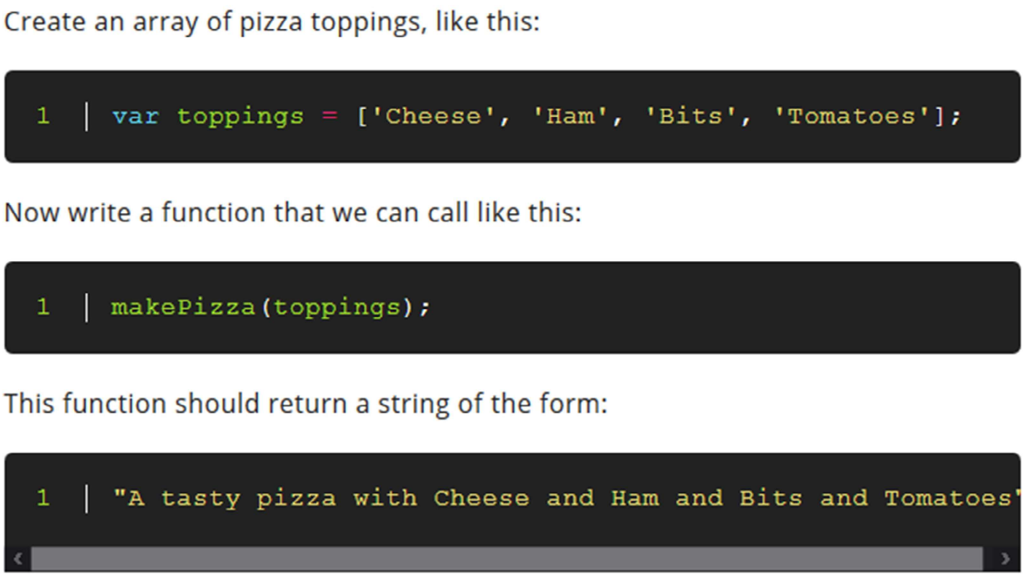


```
/**
  * Task description: Write a method that splits an array into parts
of determined size
  * Expected Result: ([1, 2, 3, 4, 5], 2) => [[1, 2], [3, 4], [5]]
  * Task complexity: 3 of 5
  * @param {Array} array - An array of any elements
  * @param {number} size - size of chunks
  * @returns {Array}
*/
const chunk = (array, size) => {
 throw new Error('Put your solution here');
}


const data = [1, 2, 3, 4, 5, 6, 7];


console.log(chunk(data, 2)) // [[1, 2], [3, 4], [5, 6], [7]]
console.log(chunk(data, 3)) // [[1, 2, 3], [4, 5, 6], [7]]
```

4. Write a TypeScript function to sort the following array of objects by title value.
   Sample object :

```
var library = [
   { author: 'Bill Gates', title: 'The Road Ahead', libraryID: 1254},
   { author: 'Steve Jobs', title: 'Walter Isaacson', libraryID: 4264},
   { author: 'Suzanne Collins', title: 'Mockingjay: The Final Book of
The Hunger Games', libraryID: 3245}
   ];
```

5. Write a TypeScript Snippet to



Create an array of pizza toppings, like this:

```
var toppings = ['Cheese', 'Ham', 'Bits', 'Tomatoes'];
```

Now write a function that we can call like this:

```
makePizza(toppings);
```

This function should return a string of the form:

```
"A tasty pizza with Cheese and Ham and Bits and Tomatoes"
```

Exercise on TypeScript Type Functions Any and Union Type

1. Write a TypeScript program [A Sandwich Calculator]

    a. Write a function called sandwich calculator. This should accept one value: slicesOfBread
    b. The function should return the total number of possible sandwiches based on the amount of slices available, so if there are 10 slices, it should return 5. Test your function with an alert box.
    c. Extend your function so it accepts two values, slicesOfBread and slicesOfCheese.
    d. It takes two slices of bread and one of cheese to make a sandwich. The function should return the total number of possible sandwiches, so if there are 10 slices of bread, but only 1 of cheese, it should return 1. You'll need an if statement to make this work.

2. Write a JavaScript function which says whether a number is perfect.

According to Wikipedia : In number theory, a perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself (also known as its aliquot sum). Equivalently, a perfect number is a number that is half the sum of all of its positive divisors (including itself).

Example : The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and 1 + 2 + 3 = 6. Equivalently, the number 6 is equal to half the sum of all its positive divisors: (1 + 2 + 3 + 6) / 2 = 6. The next perfect number is 28 = 1 + 2 + 4 + 7 + 14. This is followed by the perfect numbers 496 and 8128.

3. Write a TypeScript function to
    a. Demonstrate Optional Parameter and Default Parameter
    b. Demonstrate a Function Taking Function as a Parameter
    c. Demonstrate a Function Taking Any Type as a Parameter

4. Write a TypeScript Function to demonstrate Union Types
    a. Function whatTime() taking Union Type and returning String
    b. Function addTen() taking Union Type and returning Number

5. Write a TypeScript function to demonstrate Types of Function for Multiplication.

a. Named Function
b. Anonymous Function
c. Lambda / Arrow Functions