Monday, 5 April, 2021

C# Interview 2021

Write the most optimum solution for the following problems using C#:

1. How to convert a two-dimensional array to a one-dimensional array?

Explanation: The user will input a 2-D array (matrix) and we need to convert it to a 1-D array. We will create 1-D array column wise.

input: { { 1, 2, 3 }, { 4, 5, 6 } },

output: 1 4 2 5 3 6

2. How to count the occurrence of each character in a string?

Explanation: The user will input a string and we need to find the count of each character of the string and display it on console. We won't be counting space character.

input: hello world;

output: h – 1

e – 1

l – 3

o – 2

w – 1

r – 1

d – 1

3. How to find the angle between hour and minute hands of a clock at any given time?

Explanation: The user will input hour and minute of the time and the method should give the angle between the hour hand and minute hand at that given time.

input: 9 30, output: The angle between hour hand and minute hand is 105 degrees

input: 13 30, output: The angle between hour hand and minute hand is 135 degrees

4. Consider a sequence u where u is defined as follows:

- The number u(0) = 1 is the first one in u.
- For each x in u, then y = 2 * x + 1 and z = 3 * x + 1 must be in u too.
- There are no other numbers in u.

Example:

u = [1, 3, 4, 7, 9, 10, 13, 15, 19, 21, 22, 27, ...]

1 gives 3 and 4, then 3 gives 7 and 10, 4 gives 9 and 13, then 7 gives 15 and 22 and so on...

Task:

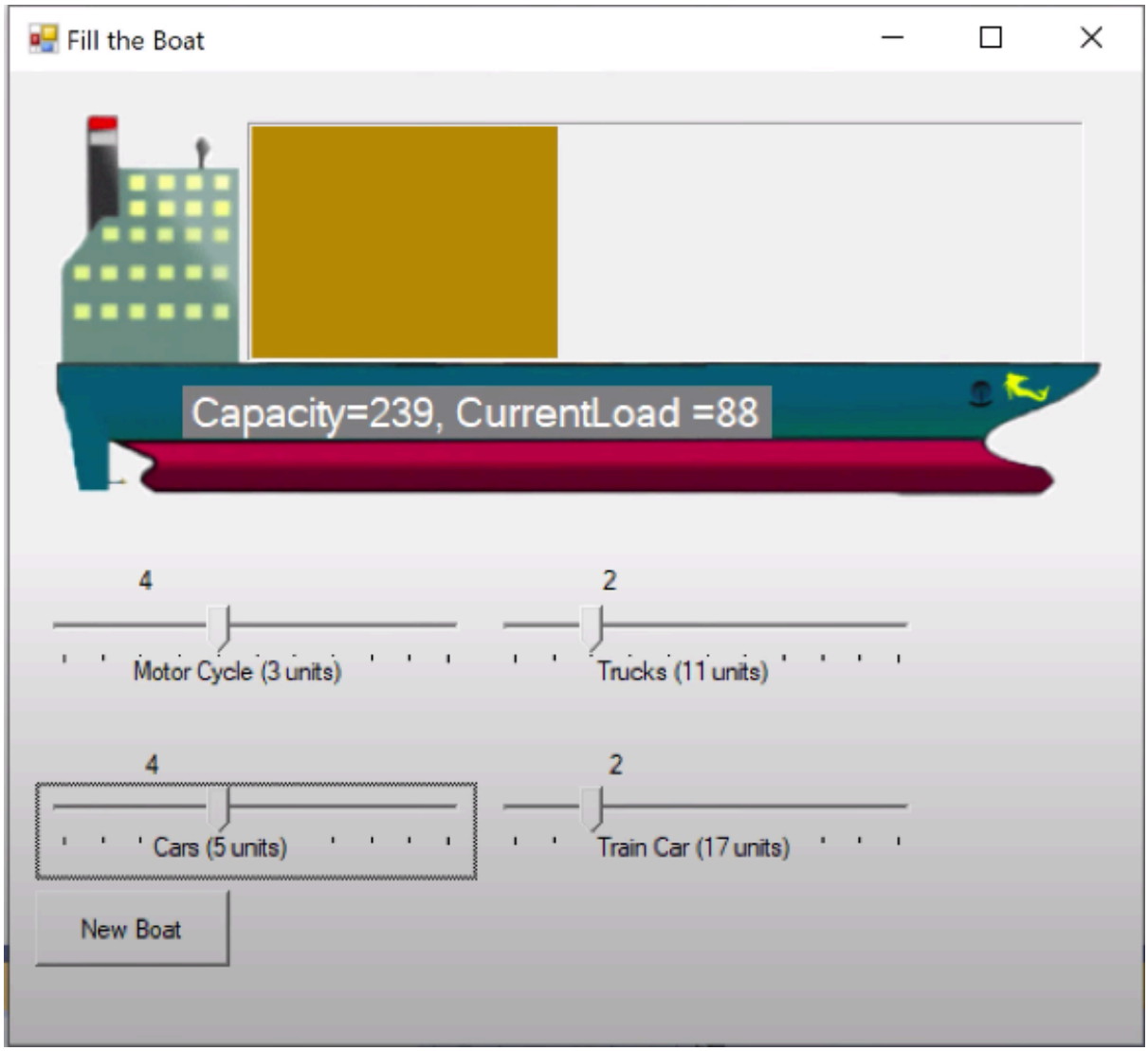
Given parameter n the function dbl_linear (or dblLinear...) returns the element u(n) of the ordered sequence u (ordered with < so there are no duplicates) .

Example: dbl_linear(10) should return 22

Create a project to replicate the following picture:

1. Create a GUI like the above picture.
2. Add sliders to change number of each loads. Below are the details of the loads and the number of units they take
   - Each Motor Cycle takes 3 units space
   - Each Car takes 5 units space
   - Each Truck takes 11 units space
   - Each Train Car takes 17 units space
3. Count the capacity and the current load
4. Fill the cargo according to the current load
5. Make the colour to green when the cargo is holding load exactly to its capacity.
6. Make the colour to red if the cargo is overloaded.
7. Refresh the boat on `new boat`

** You can use the attached `cargoship.png` to accomplish this project.


Fill the Boat
Capacity=239, CurrentLoad =88
4
Motor Cycle (3 units)
2
Trucks (11 units)
4
Cars (5 units)
2
Train Car (17 units)
New Boat