

FLUTTER PRACTICE PROBLEMS

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LAST UPDATED: 13 May 2024

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DART (CLO-1)

Question A1:

Write a program that takes as input the command line arguments of types string, integer and decimal value. In case of a string, its length should be displayed, for an integer value, it should be multiplied by 100, and for a decimal value, we need to take its power of 3.

Question A2:

Create a list of records, consisting of name and age values. Sort list with respect to name and then with age.

Question A3:

Create a list of integers, 10, 20, 30, 40.
Create another list using the first list, such that at its initialization, the new list is initialized like this:
Item 1: 10, Item 2: 20, Item 3: 30, Item 4: 40.

Question A4:

Suppose we have a list of 4 integers. You need to sum the elements of the list without using any loops or calling list elements through their indexes.

Question A5:

Suppose we have two numbers $a=10$ and $b=20$. You need to swap the numbers without using any third temporary variable, or any arithmetic or logical operators.

Question A6:

Suppose you have a range of numbers, and their respective grades:

10 – 30, grade E
31 – 50, grade D
51 – 70, grade C
71 – 90, grade B
91 – 100, grade A

Write a switch – case statement, that takes the marks and show the grade.

Question B7:

Create a list of Map with the following items:

`{"position": 10, "name": "Jawad"}`,

`{"position": 33, "name": "Faisal"}`,

`{"position": 4, "name": "Zahid"}`,

`{"position": 6, "name": "Ali"}`,

`{"position": 9, "name": "Noman"}`,

`{"position": 4, "name": "Ben"}`,

Sort the list with first with respect to position, and then with respect to name in case the positions are same.

Question B8:

Create a list of Map with the following items:

`{"name": "Ali", "age": 45, "marks": 32 }`,

```
{"name":"Noman", "age":32, "marks":23 },
```

```
{"name":"Faisal", "age":41, "marks":43 },
```

```
{"name":"Noman", "age":11, "marks":43 },
```

```
{"name":"Faisal", "age":8, "marks":43 },
```

Print those records whose age is greater than 30 and whose name is either Noman or Faisal

Question A8:

Write an example of function definition and function call with named parameters.

Question B2:

Write arrow functions for the following equations:

$$A = a^2 + b^4$$

$$Z = p^2 + 5t + A$$

Question A9:

Write arrow functions for the following equations:

$$A = x^2 + 2xy + p.Z$$

$$Z = a^2 + 4.B^2 - 8b + 2a$$

$$B = n^2 + qn + 1$$

Question A10:

Suppose the equation is:

$$Z = x^2 + 4y^2 - 8N^2$$

Where N is represented by a separate equation:

$$N = p^2 + q^2$$

Solve 'Z' with arrow function, such that you need to define the arrow function N within the body of Z.

Question A13:

Given the following list: ['apples', 'bananas', 'oranges'];

Append a string with each element of the list and capitalize each element of list. Use a combination of map and forEach function.

Question A14:

Create a small calculator application using typedef functions performing these operations, add, subtract, multiply, and divide.

Question A15:

Suppose you have the following array,

```
List<Map<String, String>> myArray = [
  {'name': 'ali', 'age': '45'},
  {'name': 'noman', 'age': '34'},
];
```

Display the key and value of array elements using for and forEach.

Question A16:

Suppose we have the following arrays:

```
var myArray1 = [3, 4, 5]
var myArray2 = [6, 7, 8]
```

Write code to append the myArray2 into myArray1.

Question A17:

Suppose we have an Dart object { 'name': 'Devin', 'hairColor': 'brown' }
Write code to change value of hairColor using spread syntax (...) three dots.

Question A18:

Write an example of defining an arrow function within another arrow function.

Question A19:

Create a class Person with attributes: id, name, age.

Derive two classes from person, named Student and Teacher.

The extra attributes of Student are cgpa, currently enrolled semester (e.g., FA22 or SP22, etc), admission date.

The extra attributes of Teacher are salary, designation (Lecturer, Assistant Professor, Professor, etc), department, and joining date.

Populate a list of at least 3 records in each class using class objects.

A user should be able to search a student or teacher with the provided ID. You should store objects of Teacher and Student in a list.

Print list of students whose cgpa is greater than 3.7.

Question A20:

Given the following list of objects (name, age, marks), you need to write myObjects.where().forEach() function, so that the name, age, and marks of those students are printed on screen whose age is greater than 25 and marks are greater than equal to 50, and name is Alice or Bob

```
myObjects.add(Student(name: 'Alice', age: 25, marks: 55));  
myObjects.add(Student(name: 'Bob', age: 30, marks: 50));  
myObjects.add(Student(name: 'Alice', age: 27, marks: 40));  
myObjects.add(Student(name: 'Charlie', age: 22, marks: 45));
```

Question B1:

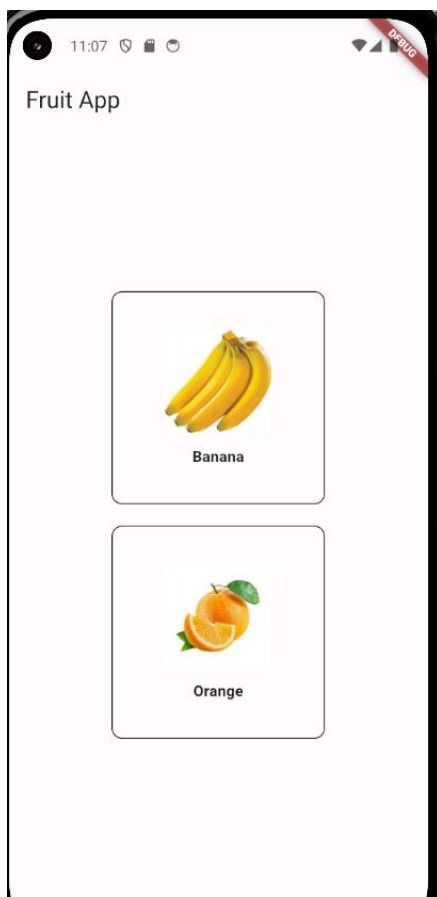
Given the following list of objects, you need to write myObjects.where().forEach() function, so that the name, age, and marks of those students are printed on screen whose age is greater than 30 and name is Noman or Faisal.

Student(name:"Ali", age:45, marks:32),
Student(name:"Faisal", age:41, marks:43),
Student(name:"Noman", age:11, marks: 43),
Student(name:"Faisal", age:8, marks:43)

FLUTTER WIDGETS (CLO-2)

Question C1:

Make an app in Flutter that shows the following on screen:



To load an image from the assets folder in Flutter, you need to follow a few steps. Let's make sure everything is set up correctly:

1. Folder Structure:

- Create an `assets` folder in your project root directory (if it doesn't already exist).

- Inside the `assets` folder, create an `images` subfolder (or any other name you prefer).
 - Place your image file (`banana.jpg`) inside the `images` folder.
2. **Update** `pubspec.yaml`:
- Open your `pubspec.yaml` file.
 - Under the `flutter` section, add the following lines to specify the `assets`:
 - `flutter:`
 - `assets:`
 - `- assets/images/`
 - Make sure the indentation is correct.
3. **Image Loading:**
- Now you can load the image using the `Image.asset` widget.
 - The asset name should be relative to the `assets` folder. In your case, it's `"assets/images/banana.jpg"`.

Question C2:

Write a flutter app to show the grade of a student for the given marks. The marks are passed as an argument to the constructor of the widget class computing the grade. The computed grade is shown in the Text widget. Here is the grade distribution for different marks ranges:

```
< 50 --- F
>= 50 and < 60 --- E
>= 60 and < 70 --- D
>= 70 and < 80 --- C
>= 80 and < 90 --- B
>= 90 --- A
```

Question C3:

Use constructor arguments to pass names of students from a `Name()` widget to an `Attendance()` widget. The following should be the output by `Attendance()` widget, where Present or Absent status is randomly generated.

Ali Khan	Present
Noman	Present
Faisal	Absent

Question C4:

Write code to add a button in Flutter. The text showing in the button should be Click Here. When the button is clicked, a Snackbar should be shown with message "hello world".

Question C5:

Write the code of TextFied() widget function.

When a user enters any text in the TextField(), it is also automatically written in another TextField() in capital letters.

Question C6:

Write a flutter program in which when a button is clicked, the text of first TextField() is assigned to second TextField()

Question C7:

Write a flutter code, so that when the button is clicked, the text "hello world" should be shown in the Text() widget, and the button should be disabled.

Question C8:

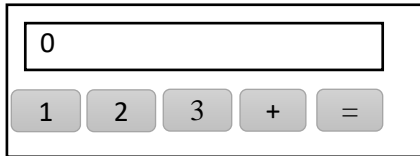
Create a simple registration page in Flutter asking for user's email and name. When the user clicks on register button, the information should be shown using Text widgets. If any input is missing, snackbar message should be shown about the missing element. Use TextEditingController() class to get values of TextField().

Question C9:

Suppose you have two TextField(), each containing a number, and a button to add the values of the two TextField(). When the button is clicked, the values of the TextField() are added and result should be shown in a Text() widget.

Question C10:

The following layout has three number buttons, a plus and equal operator, and a TextField() initialized with a zero "0".



The user should be able to enter an expression like this: 423+35+223. When the user press the equal button, the answer should be shown in the TextField().