



Assignment 4

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Question 1

How to duplicate repeating items inside a Dart list?

Problem:

Consider the code: `final List _nameList = [Bilal, Bilal, Bilal, Owais, Owais, Owais]`

What can be done in order to not repeat Bilal and Owais multiple times?

```
void main() {  
  final List _nameList = ["Bilal", "Bilal", "Bilal", "Owais", "Owais", "Owais"];  
  print(_nameList.toSet().toList());  
}
```

Output:

```
[Bilal, Owais]
```

Question 2

Let's say you are given a list saved in a variable:

Consider `a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]`.

Write a code that takes this list and makes a new list that has only the even elements of this list in it.

```
void main() {  
  List a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100];  
  List.of(a);  
  var evenNumbers = a.where((number) => number.isEven);  
  evenNumbers = evenNumbers.toList()..sort();  
  print(evenNumbers);  
}
```

Output:

```
[4, 16, 36, 64, 100]
```

Question 3

Ask the user for a number and determine whether the number is prime or not

```
import 'dart:io';
import 'dart:math';

void main() {
  print('Enter number to check prime or not');
  int? num = int.parse(stdin.readLineSync());
  if (num <= 1) {
    print("Is not a Prime Number");
  } else {
    for (int i = 2; i <= sqrt(num); i++) {
      if (num % i == 0) {
        print("$num not a Prime Number");
      }
    }
    print('$num is a prime');
  }
}
```

Output:

Enter number to check prime or not

8

8 not a Prime Number

8 is a prime

Enter number to check prime or not

7

7 is a prime

Question 4

Write a program to print multiplication table of 7 lengths 15 using loop.

```
void main() {  
    print("Table of 7");  
    for (int i = 1; i <= 15; ++i) {  
        print("7 x $i = ${i * 7}");  
    }  
}
```

Output:

```
Table of 7  
7 x 1 = 7  
7 x 2 = 14  
7 x 3 = 21  
7 x 4 = 28  
7 x 5 = 35  
7 x 6 = 42  
7 x 7 = 49  
7 x 8 = 56  
7 x 9 = 63  
7 x 10 = 70  
7 x 11 = 77  
7 x 12 = 84  
7 x 13 = 91  
7 x 14 = 98  
7 x 15 = 105
```

Question 5

Write a program to print items of the following array using for loop: fruits = ["apple", "banana", "mango", "orange", "strawberry"].

```
void main() {  
    List fruits = ["apple", "banana", "mango", "orange", "strawberry"];  
    for (int i = 0; i <= 4; ++i)  
    {  
        print("fruit no ${i+1} = ${fruits[i]}");  
    }  
}
```

Output:

```
fruit no 1 = apple  
fruit no 2 = banana  
fruit no 3 = mango  
fruit no 4 = orange  
fruit no 5 = strawberry
```

Question 6

Write a program to print multiples of 5 ranging 1 to 100.

```
void main() {  
    print("Table of  
5");  
    for (int i = 1; i  
<= 100; ++i){  
        print("5 x $i =  
${i*5}");  
    }  
}
```

Output:

Table of 5

5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
5 x 11 = 55
5 x 12 = 60
5 x 13 = 65
5 x 14 = 70
5 x 15 = 75
5 x 16 = 80
5 x 17 = 85
5 x 18 = 90
5 x 19 = 95
5 x 20 = 100
5 x 21 = 105
5 x 22 = 110
5 x 23 = 115
5 x 24 = 120
5 x 25 = 125
5 x 26 = 130

5 x 27 = 135
5 x 28 = 140
5 x 29 = 145
5 x 30 = 150
5 x 31 = 155
5 x 32 = 160
5 x 33 = 165
5 x 34 = 170
5 x 35 = 175
5 x 36 = 180
5 x 37 = 185
5 x 38 = 190
5 x 39 = 195
5 x 40 = 200
5 x 41 = 205
5 x 42 = 210
5 x 43 = 215
5 x 44 = 220
5 x 45 = 225
5 x 46 = 230
5 x 47 = 235
5 x 48 = 240
5 x 49 = 245
5 x 50 = 250
5 x 51 = 255
5 x 52 = 260
5 x 53 = 265
5 x 54 = 270
5 x 55 = 275
5 x 56 = 280
5 x 57 = 285
5 x 58 = 290
5 x 59 = 295
5 x 60 = 300
5 x 61 = 305
5 x 62 = 310
5 x 63 = 315

5 x 64 = 320
5 x 65 = 325
5 x 66 = 330
5 x 67 = 335
5 x 68 = 340
5 x 69 = 345
5 x 70 = 350
5 x 71 = 355
5 x 72 = 360
5 x 73 = 365
5 x 74 = 370
5 x 75 = 375
5 x 76 = 380
5 x 77 = 385
5 x 78 = 390
5 x 79 = 395
5 x 80 = 400
5 x 81 = 405
5 x 82 = 410
5 x 83 = 415
5 x 84 = 420
5 x 85 = 425
5 x 86 = 430
5 x 87 = 435
5 x 88 = 440
5 x 89 = 445
5 x 90 = 450
5 x 91 = 455
5 x 92 = 460
5 x 93 = 465
5 x 94 = 470
5 x 95 = 475
5 x 96 = 480
5 x 97 = 485
5 x 98 = 490
5 x 99 = 495
5 x 100 = 500

Question 7

The Temperature Converter: It's hot out! Let's make a converter based on the steps here

- a. Store a Celsius temperature into a variable.
- b. Convert it to Fahrenheit & output "NNoC is NNoF".
- c. Now store a Fahrenheit temperature into a variable.
- d. Convert it to Celsius & output "NNoF is NNoC"

```
void main() {
    num celsius, fahrenheit;

    print("Celsius into Fahrenhiet");
    print("Enter temperature in Celsius: ");
    celsius = int.parse(stdin.readLineSync(!));
    fahrenheit = (celsius * 9 / 5) + 32;
    print("$celsius Celsius = $fahrenheit Fahrenheit");

    print("Fahrenhiet into Celsius");
    print("Enter temperature in Fahrenheit: ");
    fahrenheit = int.parse(stdin.readLineSync(!));
    /* celsius to fahrenheit conversion formula */
    celsius = ((fahrenheit - 32) * 5 / 9);
    print("$fahrenheit Fahrenheit = $celsius Celsius");
}
```

Output:

```
Celsius into Fahrenhiet
Enter temperature in Celsius:
12
12 Celsius = 53.6 Fahrenheit
Fahrenhiet into Celsius
Enter temperature in Fahrenheit:
48
48 Fahrenheit = 8.88888888888889 Celsius
```

Question 8

Write a program to create a calculator for +, -, *, / & % using if statements. Take the following input:

a. First number Second number b. Operation (+, -, *, /, %). Compute & show the calculated result to user

```
void main() {
    num a, b, sum;
    var operator;
    print("Simple Calculator");
    print("Enter First Number: ");
    a = int.parse(stdin.readLineSync());
    print("Enter Second Number: ");
    b = int.parse(stdin.readLineSync());
    print("Enter an Operation (+, -, *, /, %): ");
    operator = stdin.readLineSync();
    if (operator == '+') {
        sum = a + b;
        print("Sum: $sum");
    } else if (operator == '-') {
        sum = a - b;
        print("Subtraction: $sum");
    } else if (operator == '*') {
        sum = a * b;
        print("Multiplication $sum");
    } else if (operator == '/') {
        sum = a / b;
        print("Divison $sum");
    } else if (operator == '%') {
        sum = a % b;
        print("Modulus $sum");
    } else {
        print("Wrong Operator");
    }
}
```

Output:

Simple Calculator

Enter First Number:

3

Enter Second Number:

5

Enter an Operation (+, -, *, /, %):

*

Multiplication 15

Question 9

Write a program that takes a character (I. e. string of length 1) and returns true if it is a vowel, false otherwise.

```
import 'dart:io';

void main() {
  var x = stdin.readLineSync();
  print("Enter a letter");
  if (x == "a" ||
      x == "e" ||
      x == "i" ||
      x == "o" ||
      x == "u" ||
      x == "A" ||
      x == "E" ||
      x == "I" ||
      x == "O" ||
      x == "U") {
    print("True");
  } else {
    print("False");
  }
}
```

Output:

Enter a letter

j

False

Enter a letter

a

True

Question 10

Write a program to reverse a string. For example, if my string is "natsikaP nawaJ" then my result will be "Jawan Pakistan".

```
import 'dart:io';

void main() {
  String a = stdin.readLineSync()!;
  a = a.split("").reversed.join("");
  print(a);
}
```

Output:

```
Jawan Pakistan
natsikaP nawaJ
```

Question 11

How are duplicates removed from a given array? [Ahmed, Bilal, Muhammad, Owais, Muhmmad, Ali, Ahmed]

```
void main() {
  List _nameList = [
    "Ahmed",
    "Bilal",
    "Muhammad",
    "Owais",
    "Muhmmad",
    "Ali",
    "Ahmed"
  ];
  print(_nameList.toSet().toList());
}
```

Output:

```
[Ahmed, Bilal, Muhammad, Owais, Muhmmad, Ali]
```

Question 12

Find the missing number in array of 1 to 100?

Question 13

Find the largest and smallest number in an unsorted integer array?

```
void main() {  
    List a = [121, 123, 34, 343, 53, 2, 33, 14, 3];  
    var largestValue = a[0];  
    var smallestValue = a[0];  
    for (var i = 0; i < a.length; i++) {  
        if (a[i] > largestValue) {  
            largestValue = a[i];  
        }  
        if (a[i] < smallestValue) {  
            smallestValue = a[i];  
        }  
    }  
    print("Smallest value in the list : $smallestValue");  
    print("Largest value in the list : $largestValue");  
}  
Output:  
Smallest value in the list : 2  
Largest value in the list : 343
```

Question 14

Find all pairs of an integer array whose sum is equal to a given number?