

Exercise 1

Take two lists, for example:

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

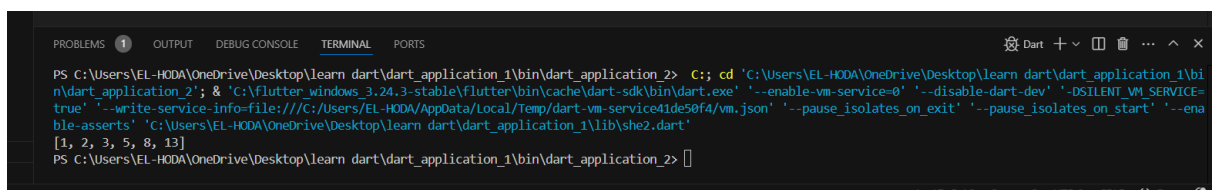
and write a program that returns a list that contains only the elements that are common between them (without duplicates). Make sure your program works on two lists of different sizes.

solution

```
import 'dart:io' ;

void main(){
  List<int> a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89];
  List<int> b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13];
  List<int> common = [];
  for (int i = 0; i < a.length; i++) {
    if (b.contains(a[i]) && !common.contains(a[i])) {
      common.add(a[i]);
    }
  }

  print(common);
}
```



```
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_1> C:\Flutter_windows_3.24.3-stable\flutter\bin\cache\dart-sdk\bin\dart.exe --enable-vm-service=0 --disable-dart-dev --DSILENT_VM_SERVICE=true --write-service-info=file:///C:/Users/EL-HODA/AppData/Local/Temp/dart-vm-service41de50f4/vm.json --pause_isolates_on_exit --pause_isolates_on_start --enable-asserts 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\lib\she2.dart'
[1, 2, 3, 5, 8, 13]
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_1>
```

Exercise 2

Ask the user for a string and print out whether this string is a palindrome or not.

 A palindrome is a string that reads the same forwards and backwards.

solution

```
void main() {
```

```

print('please enter a string: ');
String word1 = stdin.readLineSync() ?? '';

String word1ll = '';
for (int i = 0; i < word1.length; i++) {
  if (word1[i] != ' ') {
    word1ll += word1[i].toLowerCase();
  }
}

bool isPalindrome = true;
for (int i = 0; i < word1ll.length ~/ 2; i++) {
  if (word1ll[i] != word1ll[word1ll.length - 1 - i]) {
    isPalindrome = false;
    break;
  }
}

if (isPalindrome) {
  print('The string "$word1" is a palindrome.');
```

```

} else {
  print('The string "$word1" is not a palindrome.');
```

```

}
}

```

```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
please enter a string:
solo
The string "solo" is not a palindrome.
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> palindrome^C
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2>
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> C;; cd 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2'; & 'C:\flutter_windows_3.24.3-stable\flutter\bin\cache\dart-sdk\bin\dart.exe' '--enable-vm-service=0' '--disable-dart-dev' '--DSTILENT_VM_SERVICE=true' '--write-service-info-file:///C:/Users/EL-HODA/AppData/Local/Temp/dart-vm-service8253f717/vm.json' '--pause-isolates_on_exit' '--pause-isolates_on_start' '--enable-asserts' 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\lib\she2.dart'
please enter a string:
noon
The string "noon" is a palindrome.
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2>

```

Exercise 3

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

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

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

solution

```

void main() {
  List<int> a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100];

  List<int> evenElements = [];

```

```
for (int i = 0; i < a.length; i++) {
    if (a[i] % 2 == 0) {
        evenElements.add(a[i]);
    }
}

print(evenElements);
}

PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> ^C
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2>
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> C:: cd 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2'; & 'C:\Flutter_windows_3.24.3-stable\flutter\bin\cache\dart-sdk\bin\dart.exe' '--enable-vm-service=0' '--disable-dart-dev' '-DSILENT_VM_SERVICE=true' '--write-service-info-file:///C:/Users/EL-HODA/AppData/Local/Temp/dart-vm-service03942b3/vm.json' '--pause_isolates_on_exit' '--pause_isolates_on_start' '--enable-asserts' 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\lib\she2.dart'
[4, 16, 36, 64, 100]
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> ]
```

Exercise 4

Make a two-player Rock-Paper-Scissors game against a computer.

💡 Ask for player's input, compare them, print out a message to the winner.

```
void main() {
    List<String> choices = ['rock', 'paper', 'scissors'];

    print('please choose your choice paper or rock or scissor:');
    String playerChoice = stdin.readLineSync() ?? '';

    Random random = Random();
    String computerChoice = choices[random.nextInt(3)];

    print('Player choice: $playerChoice');
    print('Computer choice: $computerChoice');
    if (playerChoice == computerChoice) {
        print('It\'s a tie!');
    } else if ((playerChoice == 'rock' && computerChoice == 'scissors') ||
        (playerChoice == 'paper' && computerChoice == 'rock')) {
        print('You win!');
    } else {
        print('Computer wins!');
    }
}
```

```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
please choose your choice paper or rock or scissor:
paper
Player choice: paper
Computer choice: rock
You win!
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> ^C
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2>
PS C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2> C:: cd 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\bin\dart_application_2'; & 'C:\Flutter_windows_3.24.3-stable\Flutter\bin\cache\dart-sdk\bin\dart.exe' '--enable-vm-service=0' '--disable-dart-dev' '--DART_VM_SERVICE=true' '--write-service-info-file:///C:/Users/EL-HODA/AppData/Local/Temp/dart-vm-service652ef6f/vm.json' '--pause_isolates_on_exit' '--pause_isolates_on_start' '--enable-asserts' 'C:\Users\EL-HODA\OneDrive\Desktop\learn dart\dart_application_1\lib\she2.dart'
please choose your choice paper or rock or scissor:
rock
Player choice: rock
Computer choice: rock
It's a tie!

```