

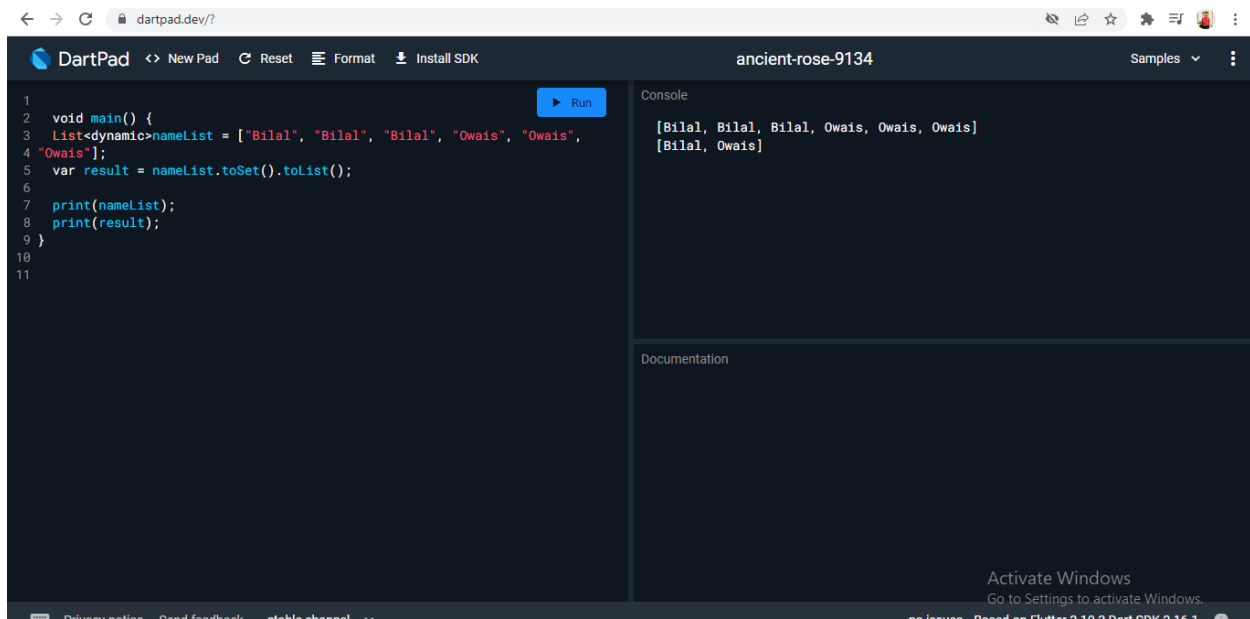
## 1. How to duplicate repeating items inside a Dart list?

### Problem

Consider the code:

```
final List<Dynamic> _nameList = [Bilal, Bilal, Bilal, Owais, Owais,  
Owais]
```

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



## 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.

The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart`. The code defines a `main` function that prints an array of numbers. The terminal output shows the execution of the program, displaying the numbers 64, 100, 4, 16, 36, 64, and 100. The left sidebar shows the 'RUN AND ...' tab with 'Dart & Flutter' selected. The bottom status bar indicates the file is in 'Dart' mode and the Dart SDK version is 2.16.1.

```
File Edit Selection View Go Run Terminal Help sher.dart - assignment - Visual Studio Code
```

main.dart sher.dart x

Run | Debug

```
1 void main() {
2   var a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100];
3   for (var i = 0; i < a.length; i++) {
4     if (a[i] % 2 == 0) {
5       print(a[i]);
6     }
7   }
8 }
9
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
64
100
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
4
16
36
64
100
PS C:\Users\Sher Ali\Desktop\assignment>
```

Activate Windows  
Go to Settings to activate Windows.

Ln 8, Col 2 Spaces: 2 UTF-8 CRLF Dart Go Live Dart: 2.16.1

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

The screenshot shows the Visual Studio Code interface with a Dart file named `main.dart`. The code defines a `main` function that prompts the user for a number and checks if it is prime. The terminal output shows the execution of the program, displaying the message '4 is not a prime number' and '78 is not a prime number'. The left sidebar shows the 'RUN AND ...' tab with 'Dart & Flutter' selected. The bottom status bar indicates the file is in 'Dart' mode and the Dart SDK version is 2.16.1.

```
File Edit Selection View Go Run Terminal Help main.dart - assignment - Visual Studio Code
```

main.dart x

Run | Debug

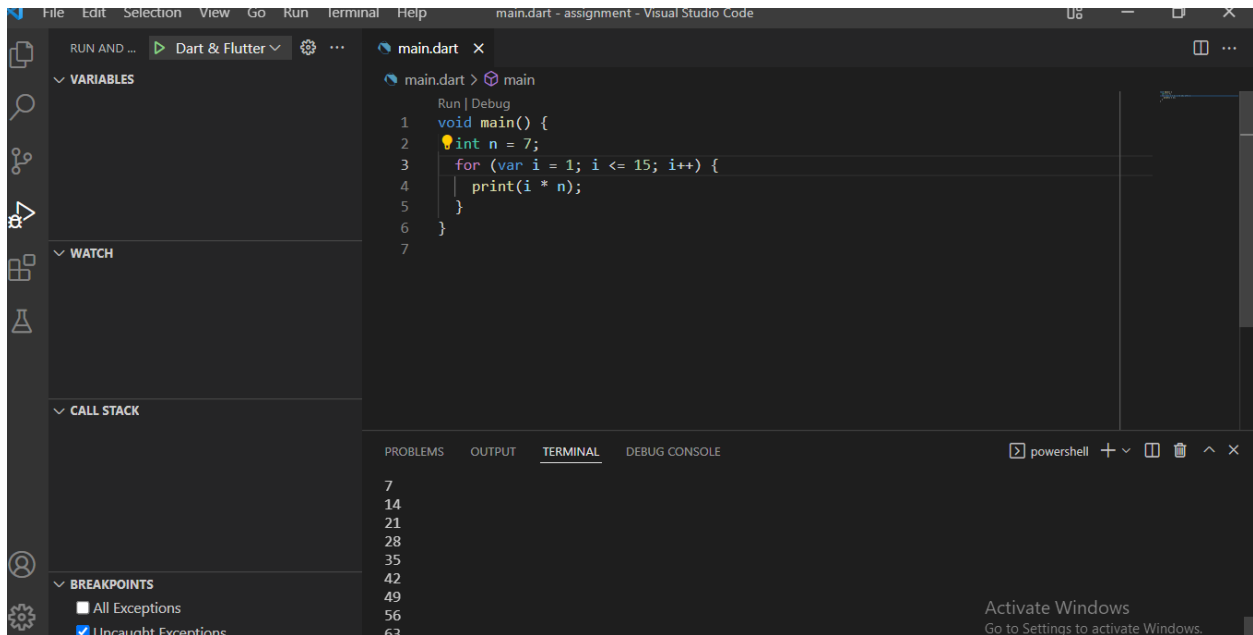
```
2
3 void main() {
4   print("Enter number");
5   int i, m = 0, flag = 0;
6   int num = int.parse(stdin.readLineSync());
7   m = num ~/ 2;
8   for (i = 2; i <= m; i++) {
9     if (num % i == 0) {
10      print('$num is not a prime number');
11      flag = 1;
12      break;
13    }
14  }
15  if (flag == 0) {
16    print('$num is prime number');
17  }
18 }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
4 is not a prime number
PS C:\Users\Sher Ali\Desktop\assignment> dart run main.dart
4
4 is not a prime number
PS C:\Users\Sher Ali\Desktop\assignment> dart run main.dart
Enter number
78
78 is not a prime number
PS C:\Users\Sher Ali\Desktop\assignment>
```

Activate Windows  
Go to Settings to activate Windows.

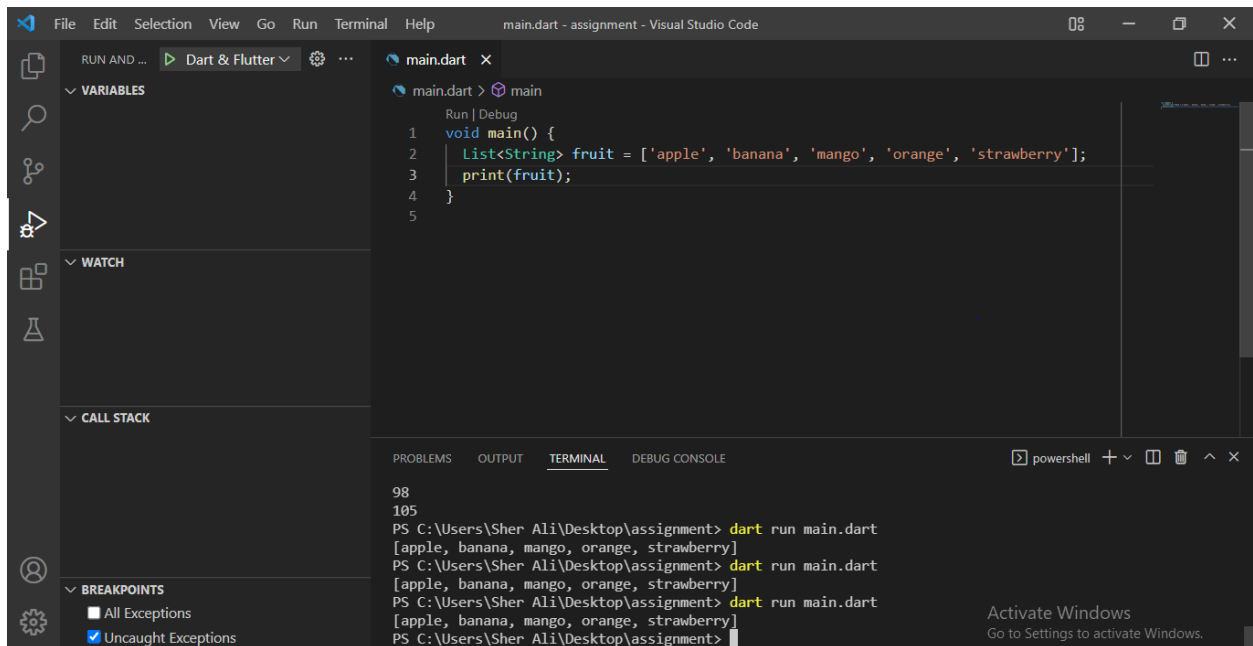
4. Write a program to print multiplication table of 7 length 15 using loop.



```
main.dart > main
Run | Debug
1 void main() {
2   int n = 7;
3   for (var i = 1; i <= 15; i++) {
4     print(i * n);
5   }
6 }
7
```

7  
14  
21  
28  
35  
42  
49  
56  
63

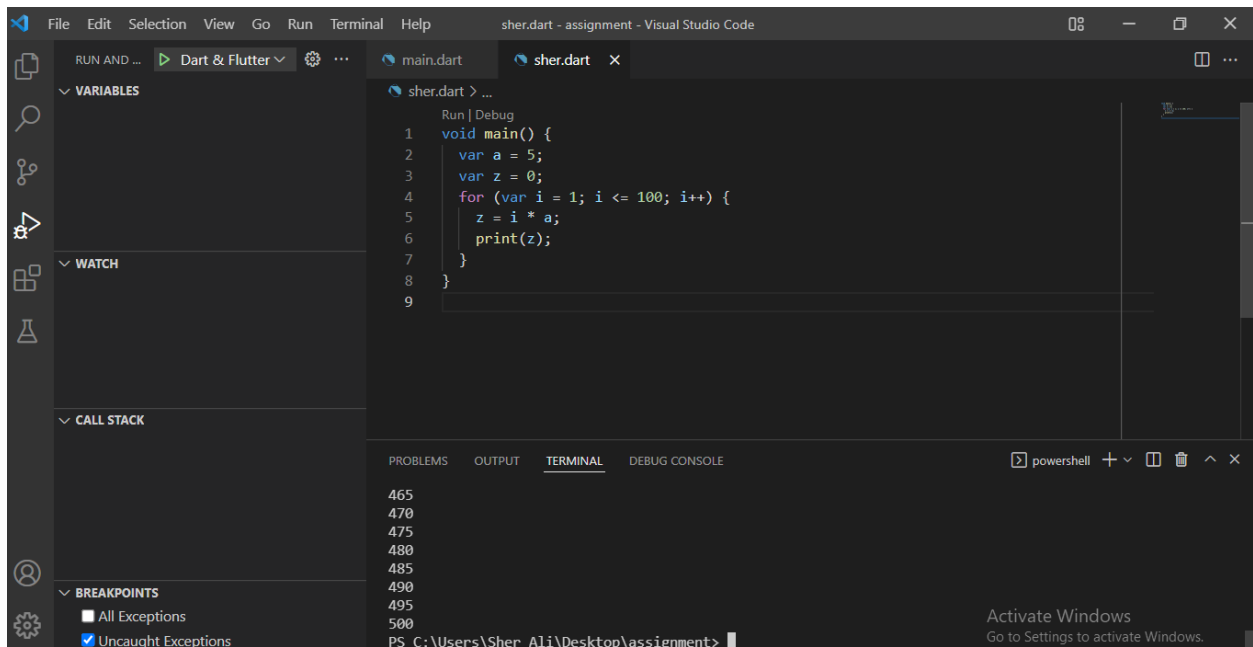
5. Write a program to print items of the following array using for loop:  
fruits = ["apple", "banana", "mango", "orange", "strawberry"].



```
main.dart > main
Run | Debug
1 void main() {
2   List<String> fruit = ['apple', 'banana', 'mango', 'orange', 'strawberry'];
3   print(fruit);
4 }
5
```

98  
105  
PS C:\Users\Sher Ali\Desktop\assignment> dart run main.dart  
[apple, banana, mango, orange, strawberry]  
PS C:\Users\Sher Ali\Desktop\assignment> dart run main.dart  
[apple, banana, mango, orange, strawberry]  
PS C:\Users\Sher Ali\Desktop\assignment> dart run main.dart  
[apple, banana, mango, orange, strawberry]  
PS C:\Users\Sher Ali\Desktop\assignment>

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



7. The Temperature Converter: It's hot out! Let's make a converter

based on the steps here.

- Store a Celsius temperature into a variable.
- Convert it to Fahrenheit & output "NN°C is NN°F".
- Now store a Fahrenheit temperature into a variable.
- Convert it to Celsius & output "NN°F is NN°C".

The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart` open. The code defines a `main` function that performs two temperature conversions: Celsius to Fahrenheit and Fahrenheit to Celsius. The output in the terminal shows the results of these conversions.

```
void main() {  
  1  num c = 23;  
  2  print("from calcius to farhenheit");  
  3  c = c * 9 / 5 + 32;  
  4  print("NNoC to NNoF ${c}");  
  5  
  6  
  7  num f = 67;  
  8  print("from farhenheit to calcius");  
  9  f = f - 32;  
 10  f = f * 5 / 9;  
 11  print("NNoF to NNoC ${f}");  
 12 }  
 13
```

The terminal output shows the following results:

```
number 1 / number 2 is 5.2  
number 1 * number 2 is 130  
number 1 % number 2 is 1  
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart  
from calcius to farhenheit  
NNoC to NNoF 73.4  
from farhenheit to calcius  
NNoF to NNoC 19.444444444444443  
PS C:\Users\Sher Ali\Desktop\assignment>
```

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.

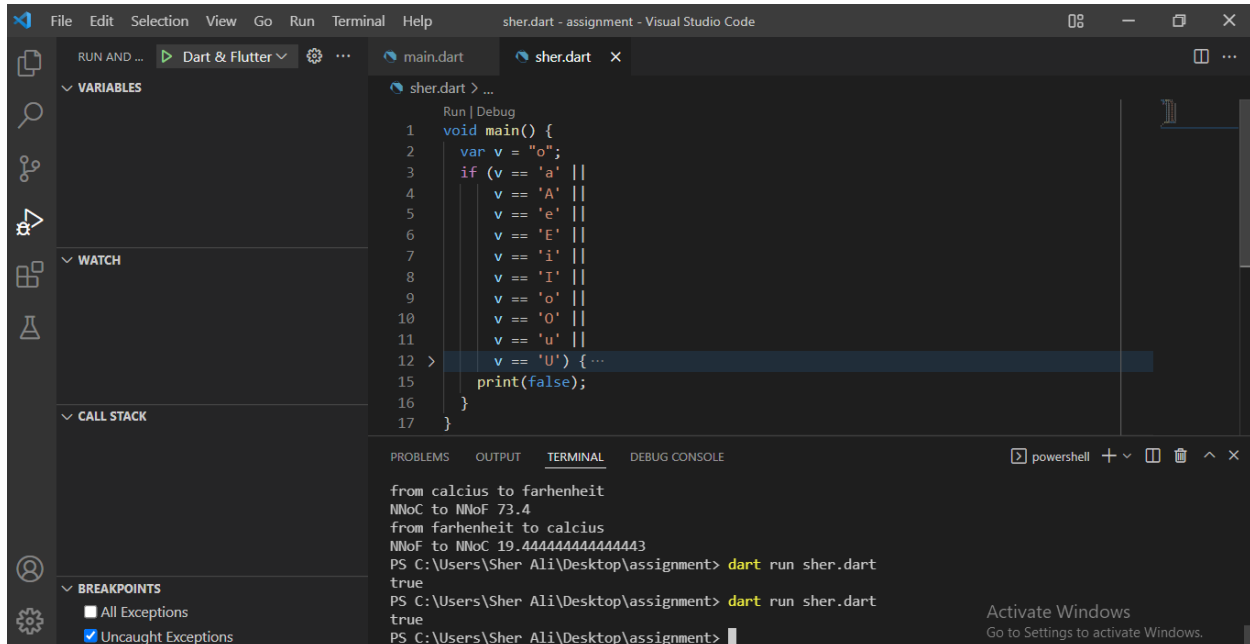
The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart` open. The code defines a `main` function that takes two numbers and performs five operations: addition, subtraction, division, multiplication, and modulo. The output in the terminal shows the results of these operations.

```
void main() {  
  1  var n1 = 26;  
  2  var n2 = 5;  
  3  var result1 = n1 + n2;  
  4  var result2 = n1 - n2;  
  5  var result3 = n1 / n2;  
  6  var result4 = n1 * n2;  
  7  var result5 = n1 % n2;  
  8  
  9  print("number 1is ${n1}");  
 10  print("number 2 is ${n2}");  
 11  print("");  
 12  print("number 1 + number 2 is ${result1}");  
 13  print("number 1 - number 2 is ${result2}");  
 14  print("number 1 / number 2 is ${result3}");  
 15  print("number 1 * number 2 is ${result4}");  
 16
```

The terminal output shows the following results:

```
number 1is 26  
number 2 is 5  
  
number 1 + number 2 is 31  
number 1 - number 2 is 21  
number 1 / number 2 is 5.2  
number 1 * number 2 is 130  
number 1 % number 2 is 1  
PS C:\Users\Sher Ali\Desktop\assignment>
```

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



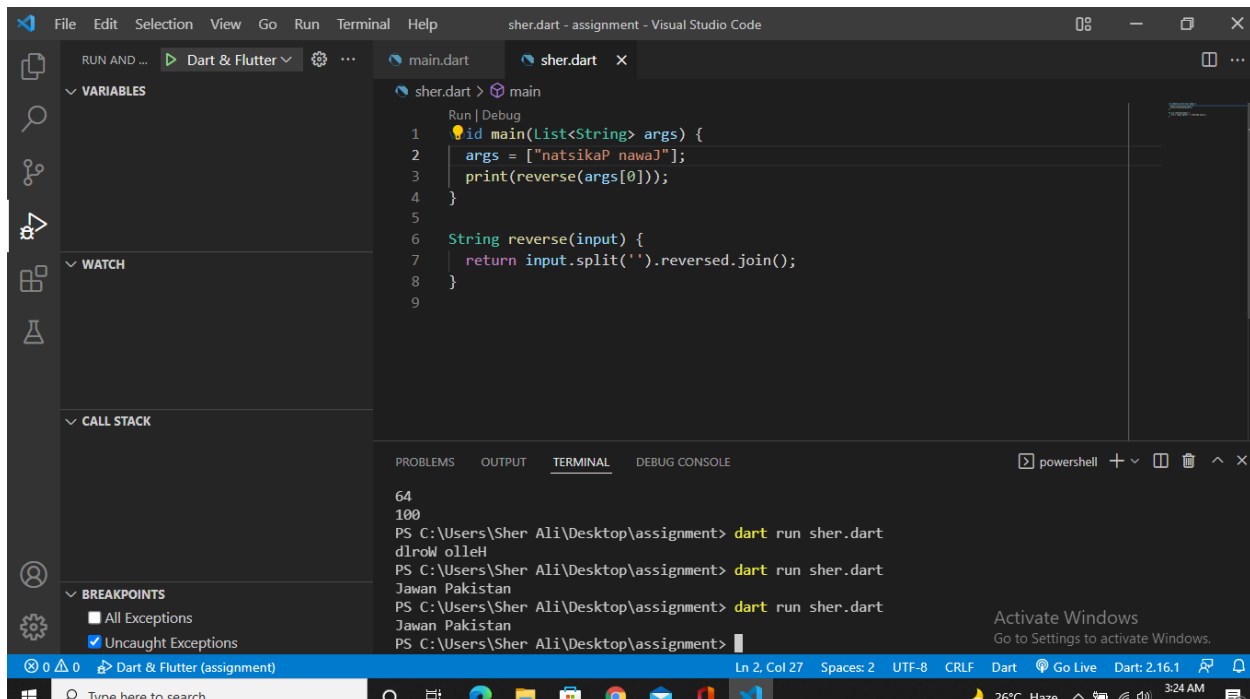
The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart`. The code defines a `main` function that takes a character `v` and checks if it is a vowel (a, A, e, E, i, I, o, O, u, U). If it is a vowel, it prints `true`; otherwise, it prints `false`. The terminal shows the output of the program, which is `true` for the input 'a'.

```
1 void main() {
2   var v = "a";
3   if (v == 'a' ||
4       v == 'A' ||
5       v == 'e' ||
6       v == 'E' ||
7       v == 'i' ||
8       v == 'I' ||
9       v == 'o' ||
10      v == 'O' ||
11      v == 'u' ||
12      v == 'U') { ...
15     print(true);
16   } else {
17     print(false);
18   }
19 }
```

Terminal Output:

```
from calcius to farhenheit
NNoC to NNoF 73.4
from farhenheit to calcius
NNoF to NNoC 19.444444444444443
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
true
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
true
PS C:\Users\Sher Ali\Desktop\assignment>
```

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



The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart`. The code defines a `main` function that takes a list of strings `args` and reverses the first string. It also defines a `reverse` function that takes a string and returns its reverse. The terminal shows the output of the program, which is `Jawan Pakistan` for the input "natsikaP nawaJ".

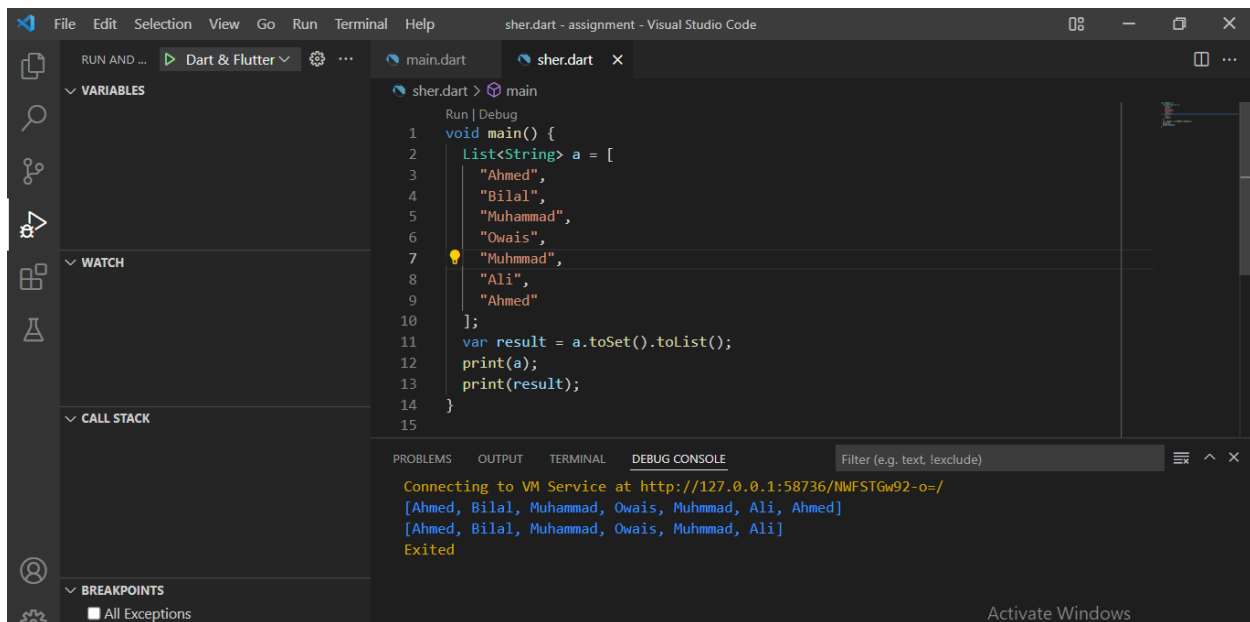
```
1 void main(List<String> args) {
2   args = ["natsikaP nawaJ"];
3   print(reverse(args[0]));
4 }
5
6 String reverse(input) {
7   return input.split('').reversed.join();
8 }
9
```

Terminal Output:

```
64
100
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
dlrow olleH
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
Jawan Pakistan
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
Jawan Pakistan
PS C:\Users\Sher Ali\Desktop\assignment>
```

11. How are duplicates removed from a given array? [Ahmed, Bilal,

Muhammad, Owais, Muhmmad, Ali, Ahmed]



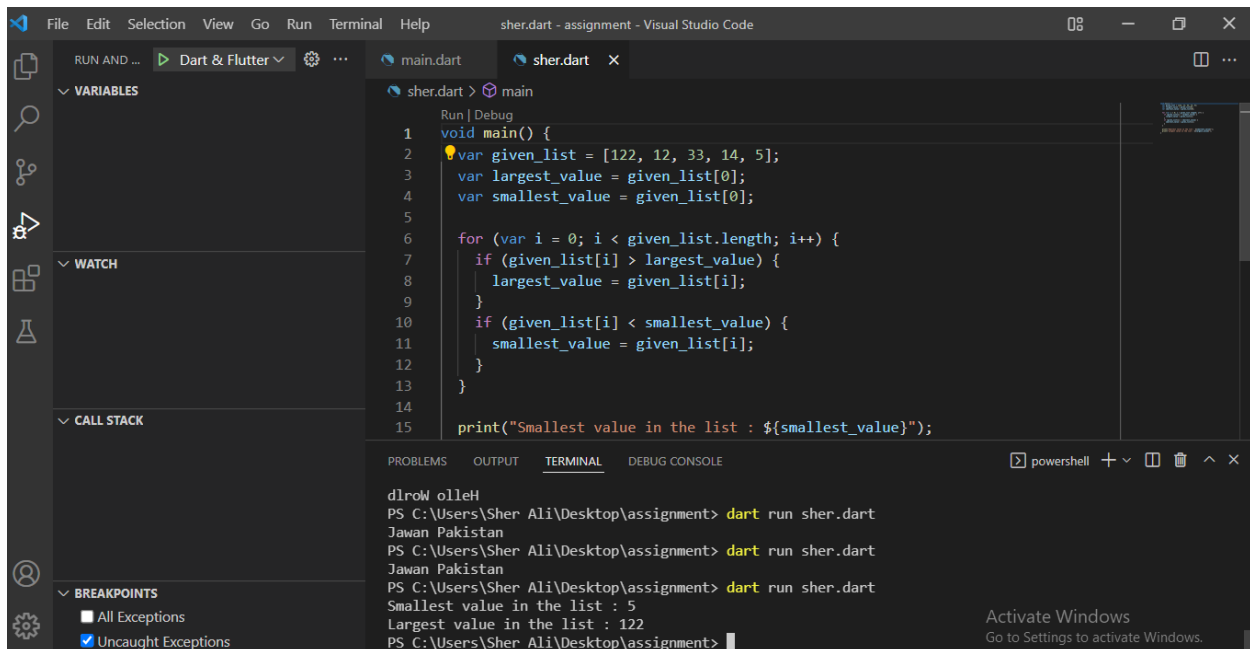
The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart`. The code defines a `main` function that creates a `List<String>` named `a` containing the names "Ahmed", "Bilal", "Muhammad", "Owais", "Muhmmad", "Ali", and "Ahmed". It then prints the list and the result of `a.toSet().toList()`. The `DEBUG CONSOLE` at the bottom shows the output: "Connecting to VM Service at http://127.0.0.1:58736/NWFTGw92-o=/", "[Ahmed, Bilal, Muhammad, Owais, Muhmmad, Ali, Ahmed]", "[Ahmed, Bilal, Muhammad, Owais, Muhmmad, Ali]", and "Exited".

```
sher.dart > main
Run | Debug
1 void main() {
2   List<String> a = [
3     "Ahmed",
4     "Bilal",
5     "Muhammad",
6     "Owais",
7     "Muhmmad",
8     "Ali",
9     "Ahmed"
10  ];
11  var result = a.toSet().toList();
12  print(a);
13  print(result);
14 }
15

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
Connecting to VM Service at http://127.0.0.1:58736/NWFTGw92-o=/
[Ahmed, Bilal, Muhammad, Owais, Muhmmad, Ali, Ahmed]
[Ahmed, Bilal, Muhammad, Owais, Muhmmad, Ali]
Exited
```

12. Find the missing number in array of 1 to 100?

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



The screenshot shows the Visual Studio Code interface with a Dart file named `sher.dart`. The code defines a `main` function that creates an array `given_list` with values [122, 12, 33, 14, 5]. It then iterates through the array to find the largest and smallest values. The `TERMINAL` at the bottom shows the output: "Smallest value in the list : 5" and "Largest value in the list : 122".

```
sher.dart > main
Run | Debug
1 void main() {
2   var given_list = [122, 12, 33, 14, 5];
3   var largest_value = given_list[0];
4   var smallest_value = given_list[0];
5
6   for (var i = 0; i < given_list.length; i++) {
7     if (given_list[i] > largest_value) {
8       largest_value = given_list[i];
9     }
10    if (given_list[i] < smallest_value) {
11      smallest_value = given_list[i];
12    }
13  }
14
15  print("Smallest value in the list : ${smallest_value}");

```

```
dlrow olleH
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
Jawan Pakistan
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
Jawan Pakistan
PS C:\Users\Sher Ali\Desktop\assignment> dart run sher.dart
Smallest value in the list : 5
Largest value in the list : 122
PS C:\Users\Sher Ali\Desktop\assignment>
```

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

