Dart Programming

RIPHAH
INTERNATIONAL
UNIVERSITY

Name: Muhammad Fahad

SAP ID: 37125

Section: BSCS-6A

Course: Mobile Application Development

Assignment#1

Dart Programming

https://github.com/muhammad-fahad-hussain/Flutter/tree/Flutter/Assignments/AssignmentDart

1. Write a program to print your name in Dart.

Program Screenshot

```dart
// 1. Write a program to print your name in Dart.


Run | Debug
void main() {
  print("Muhammad Fahad");
}

```

Output Screenshot

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS
[Running] dart "d:\BS Computer Science\6th Semester\Mc
Muhammad Fahad

[Done] exited with code=0 in 0.824 seconds
```

2. Write a program to print Hello I am "John Doe" and Hello I'am "John Doe" with single and double quotes.

Program Screenshot

Dart Programming

```
7    /* Write a program to print Hello I am "John Doe" and Hello I'am "John
8    Doe" with single and double quotes.*/
     Run | Debug
9    void main() {
10     print('Hello I am "John Doe"');
11     print("Hello, I'm 'John Doe'");
12   }
13   |
```

Output Screenshot

```
void main() {

[Done] exited with code=254 in 0.429 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Develop
Hello I am "John Doe"
Hello, I'm 'John Doe'

[Done] exited with code=0 in 0.477 seconds
```

3. Declare constant type of int set value 7.

Program and Output Screenshot:

Dart Programming

```
17
18    // 3. Declare constant type of int set value 7.
19
      Run | Debug
20 ∨ void main() {
21    💡const int constent = 7;
22      print("Const Number is $constent");
23    }
24
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

Assignments/Assignment%20in%20Dart/tempCodeRunnerFile.dart:1:1: Error
constent
^^^^^^^^

[Done] exited with code=254 in 0.532 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developmen
Const Number is 7

[Done] exited with code=0 in 0.477 seconds

4. Write a program in Dart that finds simple interest. Formula= (p * t * r) / 100
Program and Output Screenshot:

Dart Programming

```
24
25    // ================================================
26    // 4. Write a program in Dart that finds simple interest
      Run | Debug
27    void main() {
28      int p = 4;
29      int t = 2;
30      int r = 6;
31      double interest;
32      interest = (p * t * r) / 100;
33      print("Interest= $interest");
34    }
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Deve
Const Number is 7

[Done] exited with code=0 in 0.477 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Deve
Interest= 0.48

[Done] exited with code=0 in 0.522 seconds
```

5. Write a program to print a square of a number using user input.

Program and Output Screenshot:

```
37
38    // 5. Write a program to print a square of a number using user input.
39    import 'dart:io';
40
      Run | Debug
41    void main() {
42      stdout.write("Enter a number: ");
43      double num = double.parse(stdin.readLineSync()!);
44
45      double square = num * num;
46      print("Square of $num: $square");
47    }
48
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments>
* History restored

PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter> cd
* History restored

PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter> cd Assignments
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments> cd AssignmentDart
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
Enter a number: 4
Square of 4.0: 16.0
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart>
```
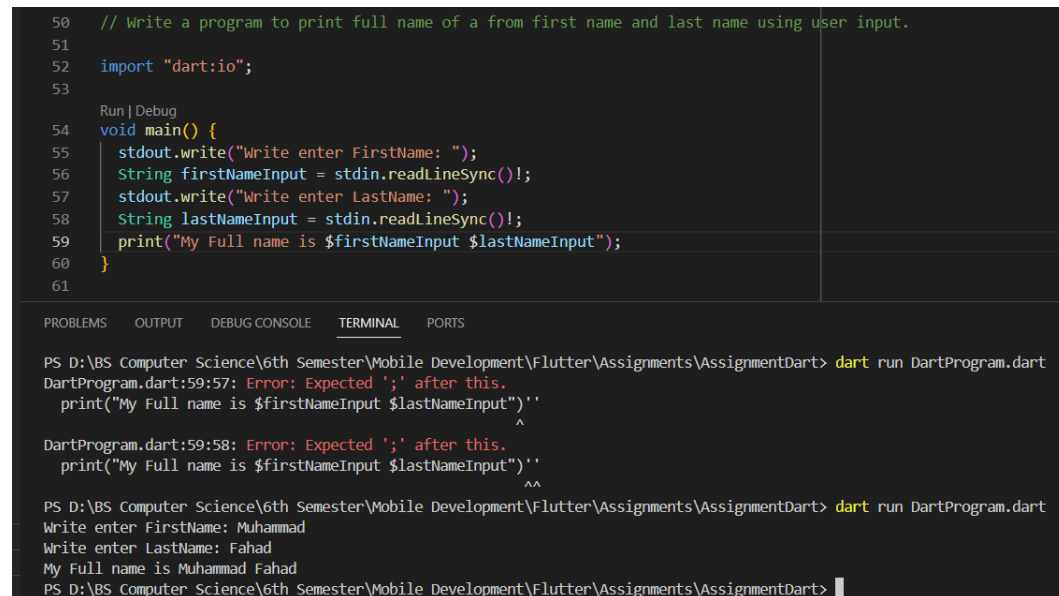
Dart Programming

6. Write a program to print full name of a from first name and last name using user input.

Program and Output Screenshot:

```dart
50    // Write a program to print full name of a from first name and last name using user input.
51
52    import "dart:io";
53
      Run | Debug
54    void main() {
55      stdout.write("Write enter FirstName: ");
56      String firstNameInput = stdin.readLineSync()!;
57      stdout.write("Write enter LastName: ");
58      String lastNameInput = stdin.readLineSync()!;
59      print("My Full name is $firstNameInput $lastNameInput");
60    }
61
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
DartProgram.dart:59:57: Error: Expected ';' after this.
  print("My Full name is $firstNameInput $lastNameInput")''
                                                         ^
DartProgram.dart:59:58: Error: Expected ';' after this.
  print("My Full name is $firstNameInput $lastNameInput")''
                                                          ^^
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
Write enter FirstName: Muhammad
Write enter LastName: Fahad
My Full name is Muhammad Fahad
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart>
```

7. Write a program to find quotient and remainder of two integers.

Program and Output Screenshot:

Dart Programming

```
63
64    // 7. Write a program to find quotient and remainder of two integers.
65
      Run | Debug
66    void main() {
67      int num1 = 21;
68      int num2 = 11;
69      int quotient = num1 ~/ num2;
70      int remainder = num1 % num2;
71      print("Quotient= $quotient");
72      print("Remainder= $remainder");
73    }
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\As
Quotient= 1
Remainder= 10

[Done] exited with code=0 in 0.425 seconds
```

8. Write a program to swap two numbers.

Program and Output Screenshot:

Dart Programming

```dart
Run | Debug
78
79  void main() {
80      int num1 = 31;
81      int num2 = 2;
82      print("Before Swaping");
83      print("Number 1= $num1");
84      print("Number 2= $num2");
85      int temp;
86      temp = num1;
87      num1 = num2;
88      num2 = temp;
89      print("After Swaping");
90      print("Number 1= $num1");
91      print("Number 2= $num2");
92  }
93
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

After Swaping
Number 1= 31
Number 2=
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assign
Before Swaping
Number 1= 31
Number 2= 2
After Swaping
Number 1= 2
Number 2= 31
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assign
```

9. Write a program in Dart to remove all whitespaces from String.

Program and Output Screenshot:

```dart
Run | Debug
98   void main() {
99       String intro = "My name is Muhammad Fahad";
100      String removeSpaceInIntro = intro.replaceAll(RegExp(r'\s+'), '');
101      print("Before removing space = $intro");
102      print("After removing space = $removeSpaceInIntro");
103  }
104
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flu
Before removing space = My name is Muhammad Fahad
After removing space = MynameisMuhammadFahad

[Done] exited with code=0 in 1.028 seconds
```
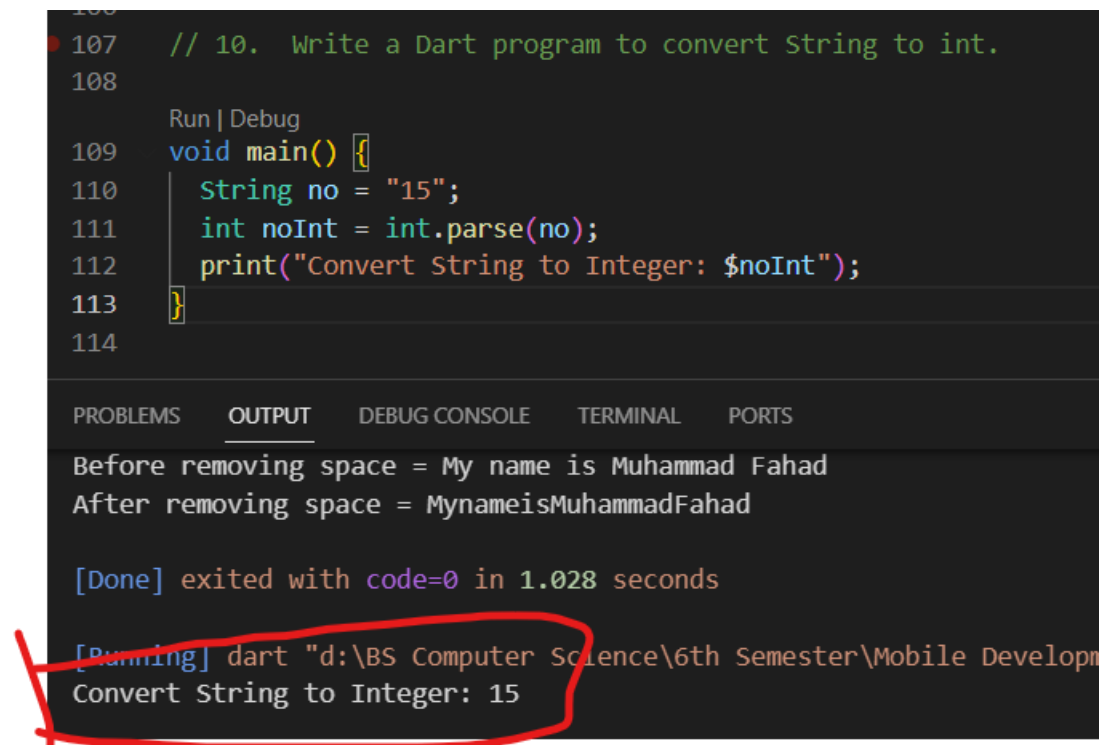
Dart Programming

10. Write a Dart program to convert String to int.

```dart
107    // 10.  Write a Dart program to convert String to int.
108
       Run | Debug
109    void main() {
110      String no = "15";
111      int noInt = int.parse(no);
112      print("Convert String to Integer: $noInt");
113    }
114
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
Before removing space = My name is Muhammad Fahad
After removing space = MynameisMuhammadFahad

[Done] exited with code=0 in 1.028 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developm
Convert String to Integer: 15
```

11. Suppose, you often go to restaurant with friends and you have to split amount of bill. Write a program to calculate split amount of bill. Formula= (total billamount) / number of people.

Dart Programming

```dart
122
123    import 'dart:io';
124
       Run | Debug
125    void main() {
126      stdout.write("Enter Total No: ");
127      double totalBill = double.parse(stdin.readLineSync()!);
128      stdout.write("Enter number of people: ");
129      int totalPeople = int.parse(stdin.readLineSync()!);
130  💡
131      double splitAmountOfBill = totalBill / totalPeople;
132
133      print("Split amount of bill = ${splitAmountOfBill.toStringAsFixed(2)}");
134    }
135
136
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
Enter Total No: 140
Enter number of people: 3
Split amount of bill = 46.666666666664
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
Enter Total No: 140
Enter number of people: 3
Split amount of bill = 46.67
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart>
```

12. Suppose, your distance to office from home is 25 km and you travel 40 km per hour. Write a program to calculate time taken to reach office in minutes. Formula= (distance) / (speed).

Program and Output Screenshot:

```dart
/*12. Suppose, your distance to office from home is 25 km and you travel 40 km per hour.
Write a program to calculate time taken to reach office in minutes. Formula= (distance) / (speed).*/

Run | Debug
void main() {
  double distanceToOffice = 25;
  double travelSpeed = 40;

  double timeInHours = distanceToOffice / travelSpeed;
  double timeInMinutes = timeInHours * 60;

  print(
      "Time taken to reach office: ${timeInMinutes.toStringAsFixed(2)} minutes");
}
```
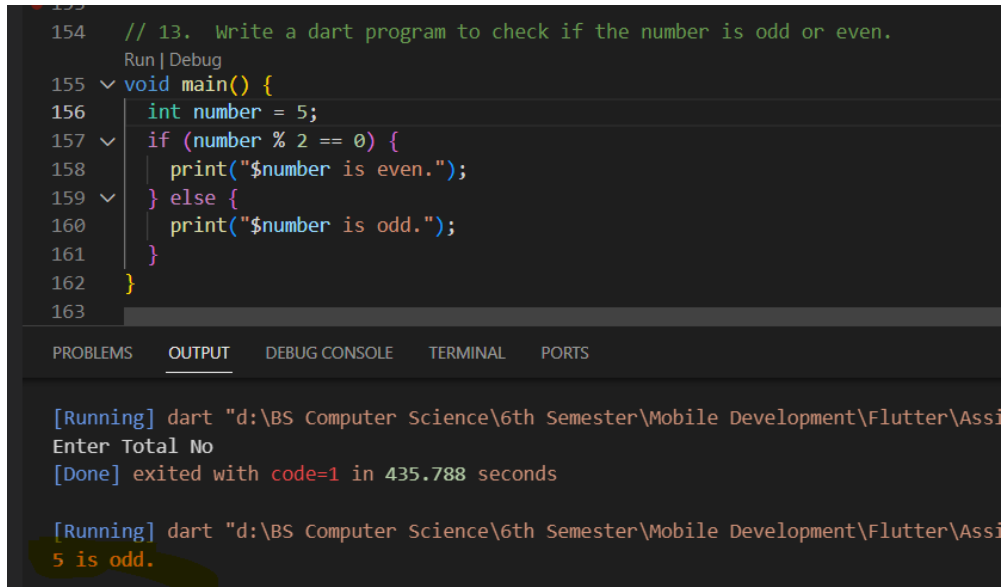
```
EMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

r number of people: 3
t amount of bill = 46.666666666664
:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
r Total No: 140
r number of people: 3
amount of bill = 46.67
:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
 taken to reach office: 37.50 minutes
:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> dart run DartProgram.dart
 taken to reach office: 37.50 minutes
```

Dart Programming

13. Write a dart program to check if the number is odd or even.

<mark>**Program and Output Screenshot:**</mark>

```
154    // 13.  Write a dart program to check if the number is odd or even.
       Run | Debug
155  v void main() {
156      int number = 5;
157  v   if (number % 2 == 0) {
158        print("$number is even.");
159  v   } else {
160        print("$number is odd.");
161      }
162    }
163
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assi
Enter Total No
[Done] exited with code=1 in 435.788 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assi
5 is odd.
```

14. Write a dart program to check whether a character is a vowel or consonant.

<mark>**Program and Output Screenshot:**</mark>

Dart Programming

```
166     // 14.Write a dart program to check whether
167
        Run | Debug
168  v void main() {
169      String character = 'a';
170      if (character == 'a' ||
171          character == 'e' ||
172          character == 'i' ||
173          character == 'o' ||
174          character == 'u' ||
175          character == 'A' ||
176          character == 'E' ||
177          character == 'I' ||
178          character == 'O' ||
179          character == 'U') {
180        print("$character is a vowel.");
181      } else {
182        print("$character is a consonant.");
183      }
184  }
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

[Running] dart "d:\BS Computer Science\6th Semest
5 is odd.

[Done] exited with code=0 in 0.411 seconds

[Running] dart "d:\BS Computer Science\6th Semest
a is a vowel.
```
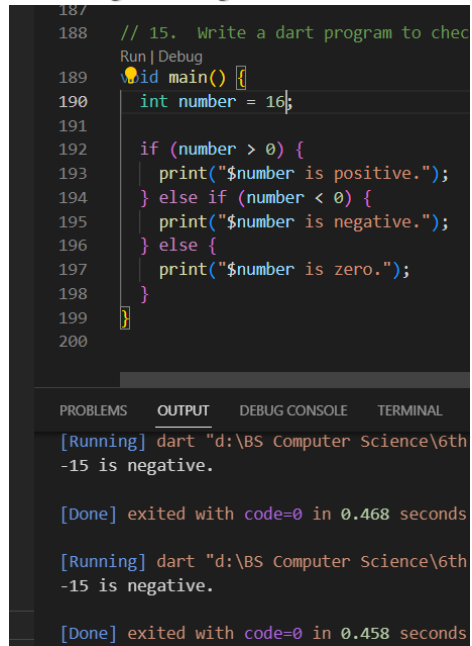
15. Write a dart program to check whether a number is positive, negative, or zero.

Program and Output Screenshot:

Dart Programming

```
187
188    // 15.  Write a dart program to chec
       Run | Debug
189    void main() {
190      int number = 16;
191
192      if (number > 0) {
193        print("$number is positive.");
194      } else if (number < 0) {
195        print("$number is negative.");
196      } else {
197        print("$number is zero.");
198      }
199    }
200
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

```
[Running] dart "d:\BS Computer Science\6th
-15 is negative.

[Done] exited with code=0 in 0.468 seconds

[Running] dart "d:\BS Computer Science\6th
-15 is negative.

[Done] exited with code=0 in 0.458 seconds
```

16.   Write a dart program to print your name 100 times.
Program and Output Screenshot:

Dart Programming

```
      Run | Debug
205   void main() {
206     String name = "Muhammad Fahad";
207
208     for (int i = 0; i < 100; i++) {
209       print("Count no ${i + 1} = $name");
210     }
211   }
212
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
Count no 77 = Muhammad Fahad
Count no 78 = Muhammad Fahad
Count no 79 = Muhammad Fahad
Count no 80 = Muhammad Fahad
Count no 81 = Muhammad Fahad
Count no 82 = Muhammad Fahad
Count no 83 = Muhammad Fahad
Count no 84 = Muhammad Fahad
Count no 85 = Muhammad Fahad
Count no 86 = Muhammad Fahad
Count no 87 = Muhammad Fahad
Count no 88 = Muhammad Fahad
Count no 89 = Muhammad Fahad
Count no 90 = Muhammad Fahad
Count no 91 = Muhammad Fahad
Count no 92 = Muhammad Fahad
Count no 93 = Muhammad Fahad
Count no 94 = Muhammad Fahad
Count no 95 = Muhammad Fahad
Count no 96 = Muhammad Fahad
Count no 97 = Muhammad Fahad
Count no 98 = Muhammad Fahad
Count no 99 = Muhammad Fahad
Count no 100 = Muhammad Fahad
```

17. Write a dart program to calculate the sum of natural numbers.
Program and Output Screenshot:

Dart Programming

```
215  // 17.  Write a dart program to calculate the sum of natural numbers.
     Run | Debug
216  void main() {
217    int n = 10;
218    int sum = 0;
219    for (int i = 1; i <= n; i++) {
220      sum += i;
221    }
222    print("Sum of natural numbers up to $n: $sum");
223  }
224
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assi
Sum of natural numbers up to 10: 55

[Done] exited with code=0 in 0.42 seconds
```

18. Write a dart program to generate multiplication tables of 5.

==Program and Output Screenshot:==

Dart Programming

```
226
227    // 18.  Write a dart program to generate multiplication tables of 5.
       Run | Debug
228    void main() {
229      int number = 5;
230      for (int i = 1; i <= 10; i++) {
231        print("$number * $i = ${number * i}\n");
232      }
233    }
234
```

PROBLEMS   **OUTPUT**   DEBUG CONSOLE   TERMINAL   PORTS

```
[Done] exited with code=0 in 0.410 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\
5 * 1 = 5

5 * 2 = 10

5 * 3 = 15

5 * 4 = 20

5 * 5 = 25

5 * 6 = 30

5 * 7 = 35

5 * 8 = 40

5 * 9 = 45

5 * 10 = 50
```

19.   Write a dart program to generate multiplication tables of 1-9.
Program and Output Screenshot:

Dart Programming

```dart
238  void main() {
239    for (int i = 1; i < 10; i++) {
240      print("Table no $i \n");
241      print("-----------------------------------\n");
242      for (int j = 1; j <= 10; j++) {
243        print("$i * $j = ${j * i}\n");
244      }
245    }
246  }
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
-----------------------------------

1 * 1 = 1

1 * 2 = 2

1 * 3 = 3

1 * 4 = 4

1 * 5 = 5

1 * 6 = 6

1 * 7 = 7

1 * 8 = 8

1 * 9 = 9

1 * 10 = 10

Table no 2
```

```
Table no 2

-----------------------------------

2 * 1 = 2

2 * 2 = 4

2 * 3 = 6

2 * 4 = 8

2 * 5 = 10

2 * 6 = 12

2 * 7 = 14

2 * 8 = 16

2 * 9 = 18

2 * 10 = 20

Table no 3

-----------------------------------

3 * 1 = 3

3 * 2 = 6

3 * 3 = 9
```

Printed the Table 1 -9

20. Write a dart program to create a simple calculator that performs addition, subtraction, multiplication, and division.

Program and Output Screenshot:

Dart Programming

```dart
252    void main() {
253      print("Sum = ${calculator(5, 3, '+')}");
254      print("Min = ${calculator(5, 3, '-')}");
255      print("Mul = ${calculator(5, 3, '*')}");
256      print("Div = ${calculator(5, 3, '/').toStringAsFixed(2)}")
257    }
258
259    double calculator(double num1, double num2, String operation)
260      switch (operation) {
261        case '+':
262          return num1 + num2;
263        case '-':
264          return num1 - num2;
265        case '*':
266          return num1 * num2;
267        case '/':
268          return num1 / num2;
269        default:
270          return 0;
271      }
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developm
8.0
2.0
15.0
1.67

[Done] exited with code=0 in 0.463 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developm
Sum = 8.0
Min = 2.0
Mul = 15.0
Div = 1.67
```
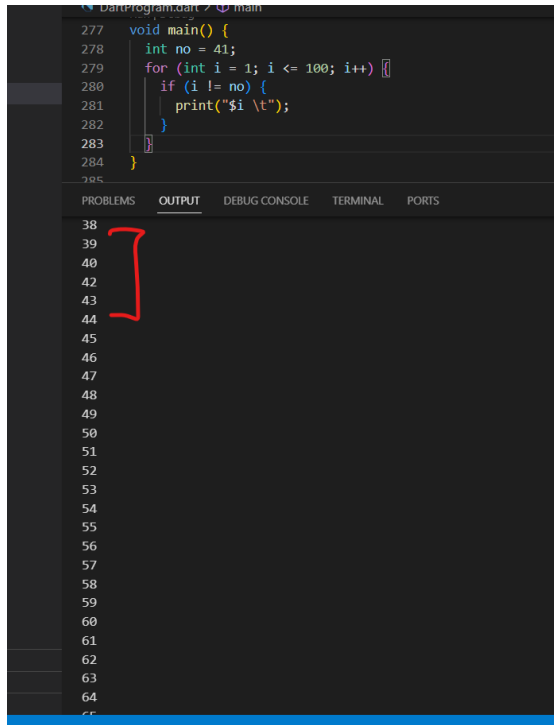
Dart Programming

21. Write a dart program to print 1 to 100 but not 41.

Program and Output Screenshot:

22. Write a program in Dart to print your own name using function.

Program and Output Screenshot:
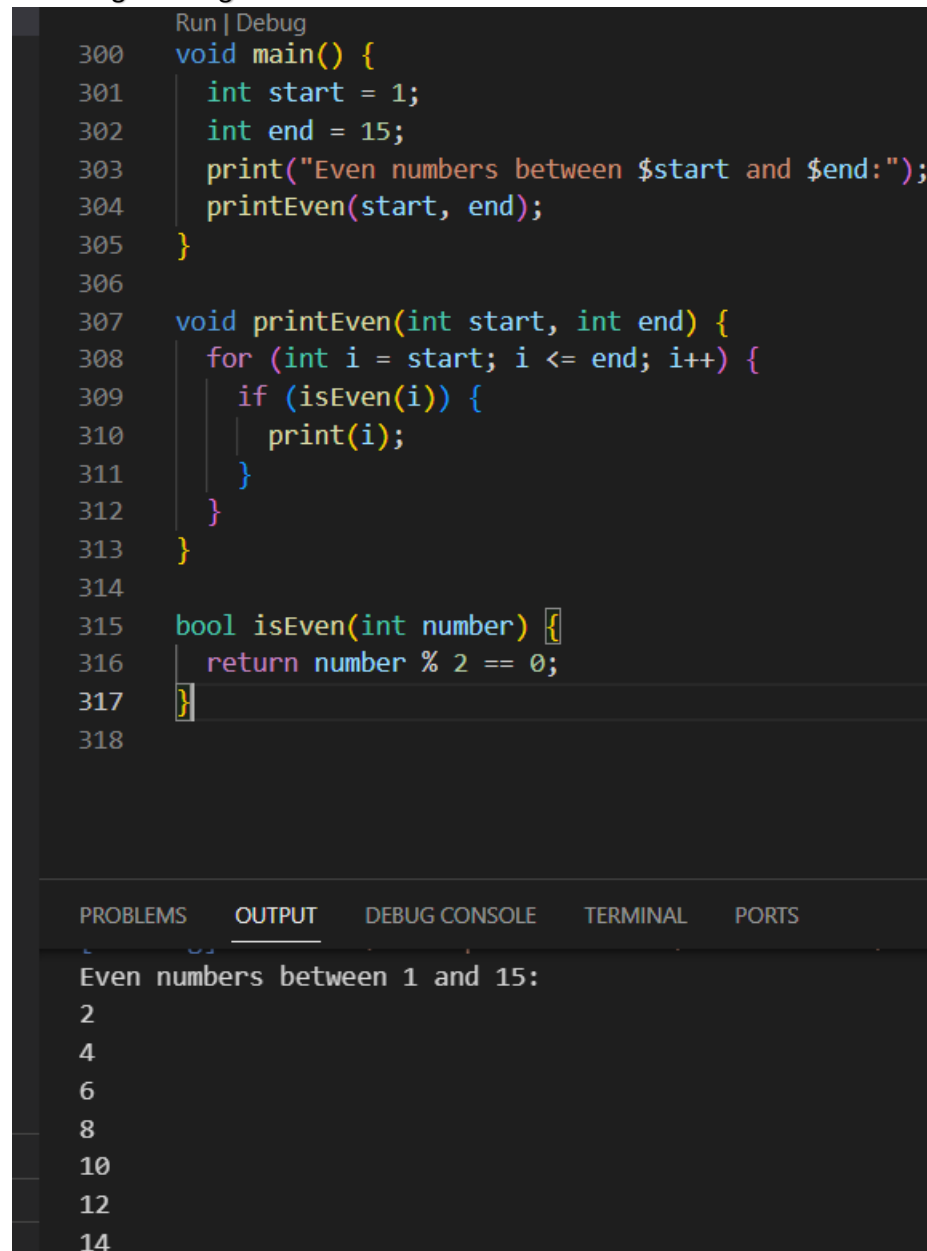
Dart Programming

```
6    // 22.  Write a program in Dart to print your own name using func
7        💡
Run | Debug
8    void main() {
9        print("My name is ${name()}");
0    }
1
2    String name() {
3        return "Muhammad Fahad";
4    }
5
```

OBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
one] exited with code=0 in 0.529 seconds

unning] dart "d:\BS Computer Science\6th Semester\Mobile Development\
 name is Muhammad Fahad

one] exited with code=0 in 0.467 seconds
```

23. Write a program in Dart to print even numbers between intervals using function.

Program and Output Screenshot:

Dart Programming

```dart
Run | Debug
300   void main() {
301     int start = 1;
302     int end = 15;
303     print("Even numbers between $start and $end:");
304     printEven(start, end);
305   }
306
307   void printEven(int start, int end) {
308     for (int i = start; i <= end; i++) {
309       if (isEven(i)) {
310         print(i);
311       }
312     }
313   }
314
315   bool isEven(int number) {
316     return number % 2 == 0;
317   }
318
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
Even numbers between 1 and 15:
2
4
6
8
10
12
14
```

24. **Create a function called greet that takes a name as an argument and prints a greeting message. For example, greet("John") should print "Hello, John".**
Program and Output Screenshot:

Dart Programming

```
319   //  -----------------------------------------------
320
321   // 24.  Create a function called greet that takes a
322   //For example, greet("John") should print "Hello, Jo
      Run | Debug
323   void main() {
324     greet("John"); |
325   }
326
327   void greet(String name) {
328     print("Hello, $name");
329   }
330
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Done] exited with code=0 in 0.481 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile
Hello, John

[Done] exited with code=0 in 0.452 seconds
```

25.   Write a program in Dart that generates random password.
Program and Output Screenshot:

Dart Programming

```
334
335    import 'dart:math';
336
       Run | Debug
337    void main() {
338      int length = 8;
339      print("Random password: ${generateRandomPassword(length)}");
340    }
341
342    String generateRandomPassword(int length) {
343      const characters =
344          'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#%^&*()-_=+';
345      var random = Random();
346      return List.generate(
347          length, (index) => characters[random.nextInt(characters.length)]).join();
348    }
349
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\Assignme
Random password: kjhJqGFD

[Done] exited with code=0 in 0.485 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\Assignme
Random password: hxL7SZbl
```

26. Write a program in Dart that find the area of a circle using function. Formula: pi * r * r
Program and Output Screenshot:

Dart Programming

```
352
353    import 'dart:math';
354

       Run | Debug
355    void main() {
356      double radius = 5.0;
357      double area = calculateCircleArea(radius);
358      print("Area of the circle: ${area.toStringAsFixed(2)}");
359    }
360
361    double calculateCircleArea(double radius) {
362      return pi * radius * radius;
363    }
364
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

[Done] exited with code=0 in 0.482 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developm
Area of the circle: 78.54

[Done] exited with code=0 in 0.459 seconds

27. Write a program in Dart to reverse a String using function.

Program and Output Screenshot:

Dart Programming

```
367    // 27.  Write a program in Dart to reverse a String using function.
       Run | Debug
368    void main() {
369      String name = "Muhammad Fahad";
370      print("String is $name");
371      print("Reserve name is ${reserveName(name)}");
372    }

374    String reserveName(String name) {
375      String reservename = '';
376      for (int i = name.length - 1; i >= 0; i--) {
377        reservename += name[i];
378      }
379      return reservename;
380    }
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutt
String is Muhammad Fahad
Reserve name is dahaF dammahuM
```

28.   Write a program in Dart to calculate power of a certain number.
For e.g 5^3=125

==Program and Output Screenshot:==

Dart Programming

```
384    // 28.  Write a program in Dart to calcula
385    import 'dart:math';
386

       Run | Debug
387    void main() {
388      int base = 5;
389      int exponent = 3;
390      double result = calculatePower(base, ex
391      print("$base^$exponent = $result");
392    }
393
394    double calculatePower(int base, int expon
395      return pow(base, exponent).toDouble();
396    }
397
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

[Done] exited with code=0 in 0.457 seconds

[Running] dart "d:\BS Computer Science\6th Semes
5^3 = 125.0

[Done] exited with code=0 in 0.474 seconds
```
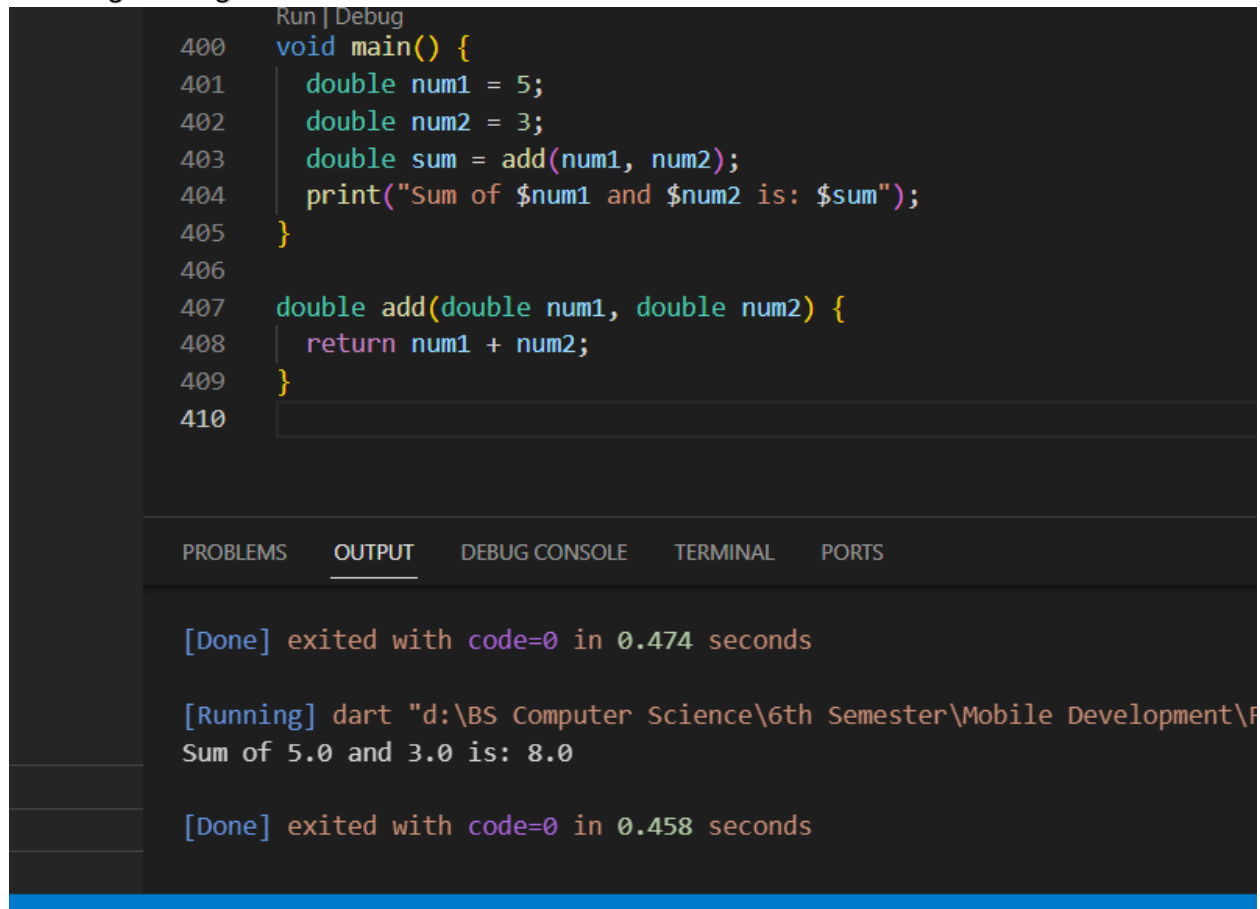
29. Write a function in Dart named add that takes two numbers as arguments and returns their sum.
Program and Output Screenshot:

Dart Programming

```
Run | Debug
400    void main() {
401      double num1 = 5;
402      double num2 = 3;
403      double sum = add(num1, num2);
404      print("Sum of $num1 and $num2 is: $sum");
405    }
406
407    double add(double num1, double num2) {
408      return num1 + num2;
409    }
410
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Done] exited with code=0 in 0.474 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\F
Sum of 5.0 and 3.0 is: 8.0

[Done] exited with code=0 in 0.458 seconds
```

30. **Write a function in Dart called maxNumber that takes three numbers as arguments and returns the largest number.**
Program and Output Screenshot:

Dart Programming

```
413   void main() {
414     double num1 = 5;
415     double num2 = 10;
416     double num3 = 7;
417     double max = maxNumber(num1, num2, num3);
418     print("The largest number is: $max");
419   }
420
421   double maxNumber(double num1, double num2, double num3) {
422     double max = num1;
423     if (num2 > max) {
424       max = num2;
425     }
426     if (num3 > max) {
427       max = num3;
428     }
429     return max;
430   }
431
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Done] exited with code=0 in 0.458 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developm
The largest number is: 10.0

[Done] exited with code=0 in 0.527 seconds
```
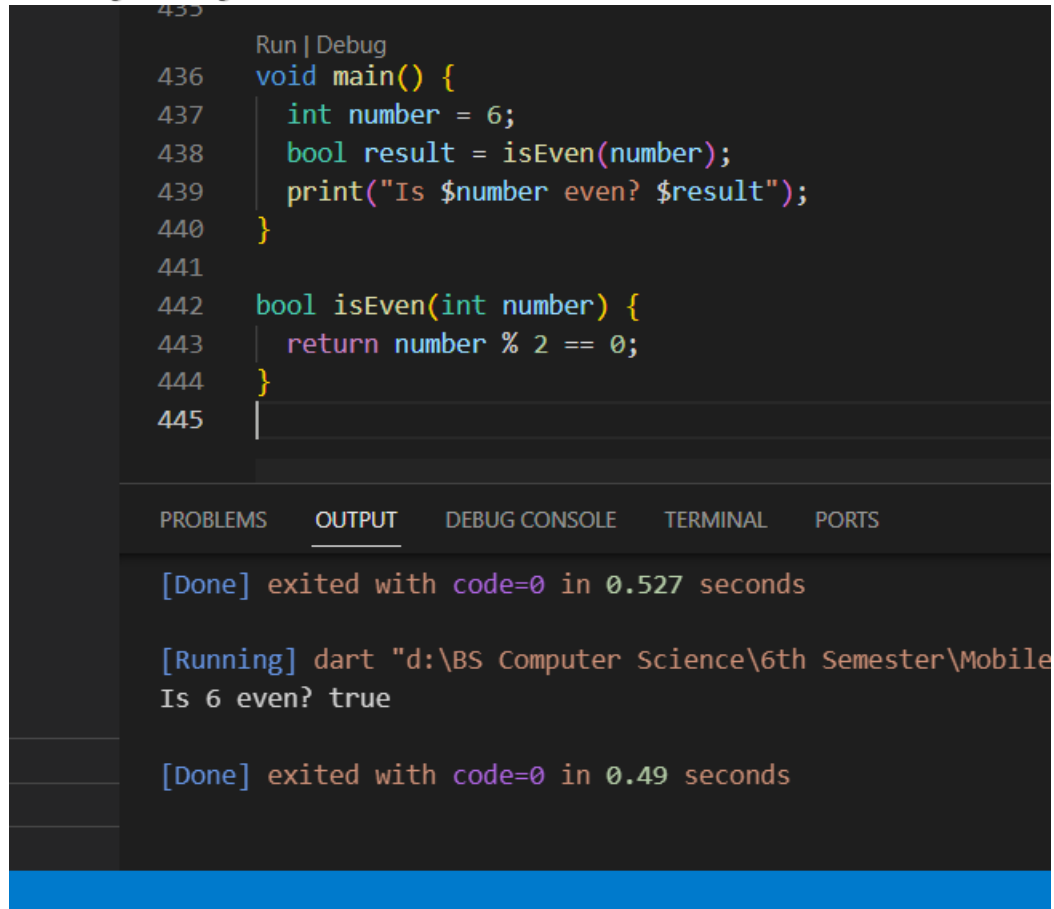
31. **Write a function in Dart called isEven that takes a number as an argument and returns True if the number is even, and False otherwise.**
Program and Output Screenshot:

Dart Programming

```
435
        Run | Debug
436     void main() {
437       int number = 6;
438       bool result = isEven(number);
439       print("Is $number even? $result");
440     }
441
442     bool isEven(int number) {
443       return number % 2 == 0;
444     }
445     |
```

PROBLEMS   **OUTPUT**   DEBUG CONSOLE   TERMINAL   PORTS

[Done] exited with code=0 in 0.527 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile
Is 6 even? true

[Done] exited with code=0 in 0.49 seconds

32. **Write a function in Dart called createUser with parameters name, age, and isActive, where isActive has a default value of true. <mark>Program and Output Screenshot:</mark>**

Dart Programming

```
446  // --------------------------------------------------------
447  // 32.  Write a function in Dart called createUser with parameters name, age,
     Run | Debug
448  void main() {
449    var user1 = createUser("Muuhammad Fahad", 21, true);
450    print(user1);
451
452    var user2 = createUser("Mehboob Waqar", 22);
453    print(user2);
454  }
455
456  String createUser(String name, int age, [bool isActive = true]) {
457    return "Name: $name, Age: $age, IsActive: $isActive";
458  }
459
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assi
Name: Muuhammad Fahad, Age: 21, IsActive: true
Name: Mehboob Waqar, Age: 22, IsActive: true

[Done] exited with code=0 in 0.487 seconds
```

33. **Write a function in Dart called calculateArea that calculates the area of a rectangle. It should take length and width as arguments, with a default value of 1 for both. Formula: length * width.**
Program and Output Screenshot:

Dart Programming

```dart
        Run | Debug
463     void main() {
464       double area1 = calculateArea(5, 3);
465       print("Area 1: $area1");
466       double area2 = calculateArea(5);
467       print("Area 2: $area2");
468     }
469
470     double calculateArea(double length, [double width = 1]) {
471       return length * width;
472     }
473
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Done] exited with code=0 in 0.485 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Developmen
Area 1: 15.0
Area 2: 5.0
```

34.   Create a list of names and print all names using list.
Program and Output Screenshot:
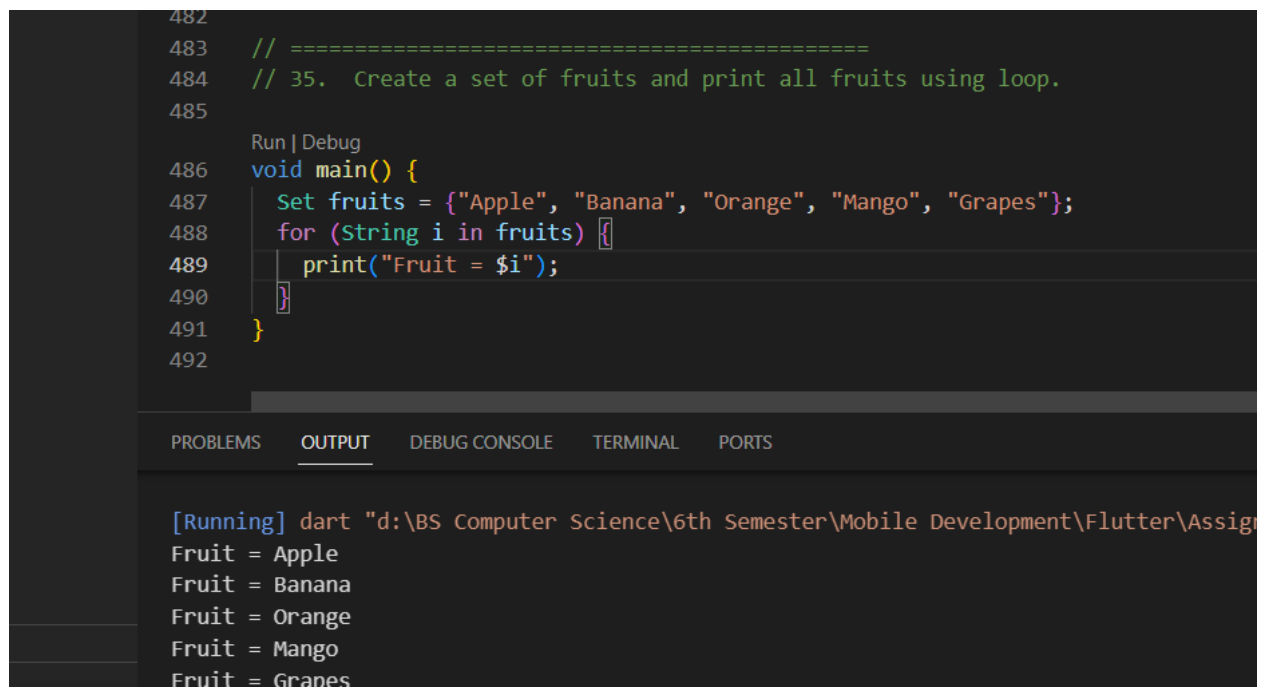
```dart
474     // 34.   Create a list of names and print all names using list.
475
        Run | Debug
476     void main() {
477       List list = ['Muhammad Fahad', "Mehboob Waqar", "Muhammad Jahanzaib"];
478       list.forEach((element) {
479         print(element);
480       });
481     }
482
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
Muhammad Fahad
Mehboob Waqar
Muhammad Jahanzaib
```

Dart Programming

35. Create a set of fruits and print all fruits using loop.
Program and Output Screenshot:

```dart
482
483    // ============================================
484    // 35.  Create a set of fruits and print all fruits using loop.
485
       Run | Debug
486    void main() {
487      Set fruits = {"Apple", "Banana", "Orange", "Mango", "Grapes"};
488      for (String i in fruits) {
489        print("Fruit = $i");
490      }
491    }
492
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS


[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assigr
Fruit = Apple
Fruit = Banana
Fruit = Orange
Fruit = Mango
Fruit = Grapes
```

36. Create a program thats reads list of expenses amount using user input and print total.
Program and Output Screenshot:

Dart Programming

```dart
495    import 'dart:io';
496
       Run | Debug
497    void main() {
498      List expenses = [];
499      double total = 0.0;
500
501      while (true) {
502        stdout.write("Enter expense amount (or 'done' to finish): ");
503        String input = stdin.readLineSync()!;
504        if (input.toLowerCase() == 'done') {
505          break;
506        }
507        try {
508          double expense = double.parse(input);
509          expenses.add(expense);
510          total += expense;
511        } catch (e) {
512          print("Invalid input. Please enter a valid number or 'done' to finish.");
513        }
514      }
515
516      print("\nTotal expenses: $total");
517    }
518
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart> d
Enter expense amount (or 'done' to finish): 45
Enter expense amount (or 'done' to finish): 63
Enter expense amount (or 'done' to finish): 64
Enter expense amount (or 'done' to finish): 75
Enter expense amount (or 'done' to finish): 24
Enter expense amount (or 'done' to finish): 75
Enter expense amount (or 'done' to finish): done

Total expenses: 346.0
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\AssignmentDart>
```

37. Create an empty list of type string called days. Use the add method to add names of 7 days and print all days.
Program and Output Screenshot:

Dart Programming

```dart
520    // 37.  Create an empty list of type string
       Run | Debug
521    void main() {
522      List days = [];
523
524      days.add("Monday");
525      days.add("Tuesday");
526      days.add("Wednesday");
527      days.add("Thursday");
528      days.add("Friday");
529      days.add("Saturday");
530      days.add("Sunday");
531
532      print("All days of the week:");
533      for (var day in days) {
534        print(day);
535      }
536    }
537
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semest
All days of the week:
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
```

38.   Add your 7 friend names to the list. Use where to find a name that starts with alphabet a.
<mark>Program and Output Screenshot:</mark>

Dart Programming

```
541    void main() {
542      List friendNames = [
543        "mehboob",
544        "zaibi",
545        "bilal",
546        "asad",
547        "waleed",
548        "umar",
549      ];
550
551      var nameStartingWithA = friendNames.where((name) => name.startsWith('a'));
552
553      if (nameStartingWithA.isNotEmpty) {
554    💡  print("Name starting with 'a': ${nameStartingWithA.first}");
555      } else {
556        print("No name starting with 'a' found.");
557      }
558    }
559
560
561    // =================================================================
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
Asad

[Done] exited with code=0 in 0.492 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\
Name starting with 'a': asad
```

39. Create a map with name, address, age, country keys and store values to it. Update country name to other country and print all keys and values.

<mark>Program and Output Screenshot:</mark>

Dart Programming

```dart
          Run | Debug
562    void main() {
563      Map person = {
564        'name': 'Muhammad Fahad',
565        'address': 'Lahore',
566        'age': 22,
567        'country': 'Pakistan'
568      };
569
570      print("Original keys and values:");
571      printMap(person);
572      person['country'] = 'UAE';
573      print("\nUpdated keys and values:");
574      printMap(person);
575    }
576
577    void printMap(Map map) {
578      map.forEach((key, value) {
579        print("$key: $value");
580      });
581    }
582
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
[Running] dart "d:\BS Computer Science\6th Semester\Mobil
Original keys and values:
name: Muhammad Fahad
address: Lahore
age: 22
country: Pakistan

Updated keys and values:
name: Muhammad Fahad
address: Lahore
age: 22
country: UAE
```

40. **Create a map with name, phone keys and store some values to it. Use where to find all keys that have length 4.**
Program and Output Screenshot:

Dart Programming

```
537
538   // =====================================================
539
540   // 40.  Create a map with name, phone keys and store some values to it. Us
      Run | Debug
541   void main() {
542     Map<String, String> contacts = {
543       'Muhammad Fahad': '1234567890',
544       'Mehboob Waqar': '9876543210',
545       'Muhammad Jahanzaib': '4567890123',
546       'Bilal': '3210987654',
547       'Asad': '6543210987'
548     };
549
550     var keysWithLengthFour = contacts.keys.where((key) => key.length == 4);
551
552     print("Keys with length 4:");
553     keysWithLengthFour.forEach((key) => print(key));
554   }
555
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
Junuuy

[Done] exited with code=0 in 0.474 seconds

[Running] dart "d:\BS Computer Science\6th Semester\Mobile Development\Flutter\A
Keys with length 4:
Asad

[Done] exited with code=0 in 0.492 seconds
```

41.   Create a simple to-do application that allows user to add, remove, and view their task.
Program and Output Screenshot:

Dart Programming

```dart
603    // 41.  Create a simple to-do application that allows user to a
604    import 'dart:io';
605
606    List<String> tasks = [];
607
       Run | Debug
608    void main() {
609      print("Select Option: ");
610      print("1. Add a task");
611      print("2. Remove a task");
612      print("3. View tasks");
613      print("4. Exit");
614
615      int ch = int.parse(stdin.readLineSync()!);
616      switch (ch) {
617        case 1:
618          addTask(tasks);
619          break;
620        case 2:
621          removeTask(tasks);
622          break;
623        case 3:
624          viewTasks(tasks);
625          break;
626        case 4:
627          exit(0);
628          break;
629        default:
630          print("Invalid option.");
631          main();
632      }
633    }
```

Dart Programming

```dart
635   void addTask(List<String> tasks) {
636     stdout.write("Enter the task to add: ");
637     String task = stdin.readLineSync()!;
638     tasks.add(task);
639     print("Task added successfully!");
640     main();
641   }
642
643   void removeTask(List<String> tasks) {
644     if (tasks.isEmpty) {
645       print("No tasks to remove.");
646       main();
647       return;
648     }
649
650     stdout.write("Enter the task to remove: ");
651     String task = stdin.readLineSync()!;
652     if (tasks.contains(task)) {
653       tasks.remove(task);
654       print("Task removed successfully!");
655     } else {
656       print("Task not found.");
657     }
658     main();
659   }
660
661   void viewTasks(List<String> tasks) {
662     if (tasks.isEmpty) {
663       print("No tasks to display.");
664     } else {
665       print("\nYour tasks:");
666       for (int i = 0; i < tasks.length; i++) {
667         print("$i. ${tasks[i]}");
668       }
669     }
670     main();
```

Dart Programming

```
PS D:\BS Computer Science\6th Semester\Mobi
Select Option:
1. Add a task
2. Remove a task
3. View tasks
4. Exit
1
Enter the task to add: Today quiz
Task added successfully!
Select Option:
1. Add a task
2. Remove a task
3. View tasks
4. Exit
3

Your tasks:
0. Today quiz
Select Option:
1. Add a task
2. Remove a task
3. View tasks
4. Exit
2
Enter the task to remove: Today quiz
Task removed successfully!
Select Option:
1. Add a task
2. Remove a task
3. View tasks
4. Exit
3
No tasks to display.
Select Option:
1. Add a task
2. Remove a task
3. View tasks
4. Exit
```

42. **Write a dart program to create a class Laptop with properties [id, name, ram] and create 3 objects of it and print all details.**
Program and Output Screenshot:

Dart Programming

```dart
674    // 42.  Write a dart program to create a class Laptop with prop...
675    class Laptop {
676      int id;
677      String name;
678      int ram;
679
680      Laptop(this.id, this.name, this.ram);
681
682      void printDetails() {
683        print("Laptop ID: $id");
684        print("Laptop Name: $name");
685        print("RAM: $ram GB");
686      }
687    }
688
       Run | Debug
689    void main() {
690      Laptop laptop1 = Laptop(1, "Acer aspire 3", 20);
691      Laptop laptop2 = Laptop(2, "Dell 7480", 16);
692      Laptop laptop3 = Laptop(3, "Lenovo ThinkPad", 8);
693
694      print("Details of Laptop 1:");
695      laptop1.printDetails();
696      print("\nDetails of Laptop 2:");
697      laptop2.printDetails();
698      print("\nDetails of Laptop 3:");
699      laptop3.printDetails();
700    }
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS

```
Laptop ID: 1
Laptop Name: Acer aspire 3
RAM: 20 GB

Details of Laptop 2:
Laptop ID: 2
Laptop Name: Dell 7480
RAM: 16 GB

Details of Laptop 3:
Laptop ID: 3
Laptop Name: Lenovo ThinkPad
RAM: 8 GB
PS D:\BS Computer Science\6th Semester\Mobile Develop
```

43.   Write a dart program to create a class House with properties [id, name, price].

Dart Programming

Program and Output Screenshot:

```
703
704    class House {
705      int id;
706      String name;
707      double price;
708
709      // Constructor
710      House(this.id, this.name, this.price);
711    }
712

       Run | Debug
713    void main() {
714      House myHouse = House(1, "Dream House", 250000.00);
715
716      print("House ID: ${myHouse.id}");
717      print("House Name: ${myHouse.name}");
718      print("House Price: \$${myHouse.price}");
719    }
720
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS

```
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assign
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assign
House ID: 1
House Name: Dream House
House Price: $250000.0
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assign
```

44. **Create a constructor of it and create 3 objects of it. Add them to the list and print all details.**

Program and Output Screenshot:

Dart Programming

```dart
722    class House {
723      int id;
724      String name;
725      double price;
726
727      House(this.id, this.name, this.price);
728    }
729
       Run | Debug
730    void main() {
731      List houses = [
732        House(1, "Dream House", 250000.00),
733        House(2, "Beach House", 500000.00),
734        House(3, "Mountain House", 350000.00),
735      ];
736
737      for (House house in houses) {
738        print("House ID: ${house.id}");
739        print("House Name: ${house.name}");
740        print("House Price: ${house.price}");
741        print("");
742      }
743    }
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\BS Computer Science\6th Semester\Mobile Development\Flutt
House ID: 1
House Name: Dream House
House Price: $250000.0

House ID: 2
House Name: Beach House
House Price: $500000.0

House ID: 3
House Name: Mountain House
House Price: $350000.0
```

45. **Write a dart program to create an enum class for gender [male, female, others] and print all values.**

Program and Output Screenshot:

Dart Programming

```
744
745    // 45.   Write a dart program to create an enum class for
746    enum Gender { male, female, others }
747

       Run | Debug
748    void main() {
749      print("All values of Gender enum:");
750      for (var gender in Gender.values) {
751        print(gender);
752      }
753    }
754
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS

```
https://dart.dev/guides/language/language-tour#a-basic-dart-progra
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\
Invoked Dart programs must have a 'main' function defined:
https://dart.dev/guides/language/language-tour#a-basic-dart-progra
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\
>>
Error when reading 'gender_enum.dart': No such file or directory.
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\
All values of Gender enum:
Gender.male
Gender.female
Gender.others
```

46.   Write a dart program to create a class Animal with properties [id, name, color].
Program and Output Screenshot:

Dart Programming

```dart
756    class Animal {
757        int id;
758        String name;
759        String color;
760
761        Animal(this.id, this.name, this.color);
762    }
763

    Run | Debug
764    void main() {
765        Animal myAnimal = Animal(1, "Tiger", "Orange");
766
767        print("Animal ID: ${myAnimal.id}");
768        print("Animal Name: ${myAnimal.name}");
769        print("Animal Color: ${myAnimal.color}");
770    }
771
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS D:\BS Computer Science\6th Semester\Mobile Development\F
>>
Error when reading 'gender_enum.dart': No such file or dire
PS D:\BS Computer Science\6th Semester\Mobile Development\F
All values of Gender enum:
Gender.male
Gender.female
Gender.others
PS D:\BS Computer Science\6th Semester\Mobile Development\F
Animal ID: 1
Animal Name: Tiger
Animal Color: Orange
PS D:\BS Computer Science\6th Semester\Mobile Development\F
```

47. **Create another class called Cat and extends it from Animal. Add new properties sound in String. Create an object of a Cat and print all details.**

Dart Programming
Program and Output Screenshot:

```dart
      DartProgram.dart    Animal
772    // 47.  Create another class called Cat and extends it from Animal.
773    class Animal {
774      int id;
775      String name;
776      String color;
777
778      Animal(this.id, this.name, this.color);
779    }
780
781    class Cat extends Animal {
782      String sound;
783
784      Cat(int id, String name, String color, this.sound) : super(id, nam
785    }
786
       Run | Debug
787    void main() {
788      Cat myCat = Cat(1, "Whiskers", "Gray", "Meow");
789
790      print("Cat ID: ${myCat.id}");
791      print("Cat Name: ${myCat.name}");
792      print("Cat Color: ${myCat.color}");
793      print("Cat Sound: ${myCat.sound}");
794    }
795
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
Animal ID: 1
Animal Name: Tiger
Animal Color: Orange
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\A
Cat ID: 1
Cat Name: Whiskers
Cat Color: Gray
Cat Sound: Meow
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Assignments\A
```

Dart Programming

48.   Write a dart program to create a class Camera with private properties [id, brand, color, price]. Create a getter and setter to get and set values. Also, create 3 objects of it and print all details.
Program and Output Screenshot:

```dart
class Camera {
  int _id;
  String _brand;
  String _color;
  double _price;

  Camera(this._id, this._brand, this._color, this._price);

  int get id => _id;

  set id(int id) => _id = id;

  String get brand => _brand;

  set brand(String brand) => _brand = brand;

  String get color => _color;

  set color(String color) => _color = color;

  double get price => _price;

  set price(double price) => _price = price;
}

Run | Debug
void main() {
  Camera camera1 = Camera(1, "Canon", "Black", 799.99);
  Camera camera2 = Camera(2, "Nikon", "Silver", 899.99);
  Camera camera3 = Camera(3, "Sony", "Red", 999.99);
  print("Details of Camera 1:");
  printCameraDetails(camera1);
```

Dart Programming

```
823     void main() {
825         Camera camera2 = Camera(2, "Nikon", "Silver", 899.99);
826         Camera camera3 = Camera(3, "Sony", "Red", 999.99);
827         print("Details of Camera 1:");
828         printCameraDetails(camera1);
829         print("\nDetails of Camera 2:");
830         printCameraDetails(camera2);
831         print("\nDetails of Camera 3:");
832         printCameraDetails(camera3);
833     }
834
835     void printCameraDetails(Camera camera) {
836         print("ID: ${camera.id}");
837         print("Brand: ${camera.brand}");
838         print("Color: ${camera.color}");
839         print("Price: \$${camera.price}");
840     }
841
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS

```
Details of Camera 1:
ID: 1
Brand: Canon
Color: Black
Price: $799.99

Details of Camera 2:
ID: 2
Brand: Nikon
Color: Silver
Price: $899.99

Details of Camera 3:
ID: 3
Brand: Sony
Color: Red
Price: $999.99
```

49. **Create an interface called Bottle and add a method to it called open(). Create a class called CokeBottle and implement the Bottle and print the message "Coke bottle is opened". Add a factory constructor to Bottle and return the object of CokeBottle.**

Dart Programming

Instantiate CokeBottle using the factory constructor and call the open() on the object.

```
843
844   abstract class Bottle {
845     void open();
846   }
847
848   class CokeBottle implements Bottle {
849     void open() {
850       print("Coke bottle is opened");
851     }
852   }
853
854   class BottleFactory {
855     static Bottle createBottle() {
856       return CokeBottle();
857     }
858   }
859
      Run | Debug
860   void main() {
861     Bottle bottle = BottleFactory.createBottle();
862
863     bottle.open();
864   }
865
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\BS Computer Science\6th Semester\Mobile Development\Flutt
Coke bottle is opened
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutt
```

50.   Create a simple quiz application using oop that allows users to play and view their score.

Dart Programming

Program and Output Screenshot:

Dart Programming

```dart
66    import 'dart:io';
67
68    class Question {
69      String questionText;
70      bool correctAnswer;
71
72      Question(this.questionText, this.correctAnswer);
73    }
74
75    class Quiz {
76      List<Question> questions;
77      int currentQuestionIndex = 0;
78      int score = 0;
79
80      Quiz(this.questions);
81      void displayQuestion() {
82        Question currentQuestion = questions[currentQuestionIndex];
83        print("Question: ${currentQuestion.questionText}");
84      }
85
86      void answerQuestion(bool userAnswer) {
87        Question currentQuestion = questions[currentQuestionIndex];
88        if (userAnswer == currentQuestion.correctAnswer) {
89          print("Correct!");
90          score++;
91        } else {
92          print("Incorrect!");
93        }
94        currentQuestionIndex++;
95      }
96
97      bool isQuizFinished() {
```

Dart Programming

```dart
886        void answerQuestion(bool userAnswer) {
887          Question currentQuestion = questions[currentQuestionIndex];
888          if (userAnswer == currentQuestion.correctAnswer) {
889            print("Correct!");
890            score++;
891          } else {
892            print("Incorrect!");
893          }
894          currentQuestionIndex++;
895        }
896
897        bool isQuizFinished() {
898          return currentQuestionIndex >= questions.length;
899        }
900
901        void displayScore() {
902          print("Quiz ended. Your score: $score/${questions.length}");
903        }
904      }
905
       Run | Debug
906      void main() {
907        List<Question> questions = [
908          Question("Is Dart a programming language?", true),
909          Question("Is Dart primarily used for web development?", false),
910          Question("Is Flutter a framework for building web applications?", fals
911          Question("Is Dart statically typed?", true),
912        ];
913        Quiz quiz = Quiz(questions);
914
915        while (!quiz.isQuizFinished()) {
```

Dart Programming

```
906    void main() {
913      Quiz quiz = Quiz(questions);
914
915      while (!quiz.isQuizFinished()) {
916        quiz.displayQuestion();
917        stdout.write("Your answer (true/false): ");
918        String input = stdin.readLineSync()!;
919        bool userAnswer = input.toLowerCase() == 'true';
920        quiz.answerQuestion(userAnswer);
921      }
922
923      quiz.displayScore();
924    }
925
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS

```
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
Question: Is Dart a programming language?
Your answer (true/false): false
Incorrect!
Question: Is Dart primarily used for web development?
Your answer (true/false): false
Correct!
Question: Is Flutter a framework for building web applications?
Your answer (true/false): true
Incorrect!
Question: Is Dart statically typed?
Your answer (true/false): true
Correct!
Quiz ended. Your score: 2/4
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
```

51.   What is the purpose of the ? operator in Dart null safety?
Program and Output Screenshot:

In Dart null safety, the ? operator is used in several contexts to work with potentially nullable types. Its purpose is to indicate that a variable or expression can be null, and it allows for safe navigation and null-aware operations.

Dart Programming

Here are the main uses of the `?` operator in Dart null safety:

1. **Nullable Type Declaration**: When declaring a variable, you can explicitly mark it as nullable by appending `?` after its type. For example:

   dartCopy code

2. **Null-aware Access**: The `?.` operator is used for null-aware access, which allows accessing properties or calling methods on an object only if the object is not null. If the object is null, the expression evaluates to null. For example:

   dartCopy code

3. **Null-aware Assignment**: The `??=` operator is used for null-aware assignment, which assigns a value to a variable only if the variable is currently null. For example:

   dartCopy code

4. **Conditional Expression**: The `condition ? expr1 : expr2` operator is used for conditional expressions. In Dart null safety, both `expr1` and `expr2` can be nullable, and the result of the expression is nullable if either `expr1` or `expr2` is nullable. For example:

   dartCopy code

5. **Function Invocation**: The `?` operator can be used to make function invocations null-safe. If the function might be null, you can use `?.` to invoke it conditionally. For example:

   dartCopy code

52. Create a late variable named address, assign a US value to it and print it.

Program and Output Screenshot:

Dart Programming

```
928    // 52.  Create a late variable n
929    late String address;
930

       Run | Debug
931    void main() {
932      address = 'US';
933      print(address);
934    }
935
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINA

Quiz ended. Your score: 2/4
PS D:\BS Computer Science\6th Semester\Mo
US
PS D:\BS Computer Science\6th Semester\Mo
```

53.   How do you declare a nullable type in Dart null safety?
Program and Output Screenshot:

```
937
938    int? nullableInt;
939
```

54.   Write a program in a dart to create an age variable and assign a null value to it using ?.
Program and Output Screenshot:

Dart Programming

```
Run | Debug
938   void main() {
939     int? age;
940     print(age);
941   }
942
```

```
PROBLEMS    OUTPUT    DEBUG CONSOL

Quiz ended. Your score: 2/4
PS D:\BS Computer Science\6th S
US
PS D:\BS Computer Science\6th S
null
PS D:\BS Computer Science\6th S
```

55. Write a function that accepts a nullable int parameter and returns 0 if the value is null using null coalescing operator ??.

Program and Output Screenshot:

```
944   int returnZeroIfNull(int? value) {
945     return value ?? 0;
946   }
947

      Run | Debug
948   void main() {
949     int? nullableValue = null;
950     print(returnZeroIfNull(nullableValue)); // Out
951   }
952
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\BS Computer Science\6th Semester\Mobile Development\
0
PS D:\BS Computer Science\6th Semester\Mobile Development\
```

Dart Programming

56. **Write a function named generateRandom() in dart that randomly returns 100 or null. Also, assign a return value of the function to a variable named status that can't be null. Give status a default value of 0, if generateRandom() function returns null**
<mark>Program and Output Screenshot:</mark>

```
952
953    import 'dart:math';
954
955    int generateRandom() {
956      return Random().nextInt(2) == 0 ? 100 : null ?? 0;
957    }
958
       Run | Debug
959    void main() {
960      int status = generateRandom();
961      print('Status: $status');
962    }
963
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

0
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
Status: 0
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
Status: 0
PS D:\BS Computer Science\6th Semester\Mobile Development\Flutter\Ass
```