

Q1)

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

```
List<int> findFactors(int number) {
```

```
    List<int> factors = [];
```

```
    for (int i = 1; i <= number; i++) {
```

```
        if (number % i == 0) {
```

```
            factors.add(i);
```

```
        }
```

```
    }
```

```
    return factors;
```

```
}
```

```
void main() {
```

```
    print("Enter a number:");
```

```
    int number = int.parse(stdin.readLineSync() ?? "");
```

```
    List<int> factors = findFactors(number);
```

```
    print("Factors of $number are:");
```

```
    for (int factor in factors) {
```

```
        print(factor);
```

```
    }
```

```
}
```

```
C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD\listFactors.dart"
```

```
Enter a number:
```

```
10
```

```
Factors of 10 are:
```

```
1
```

```
2
```

```
5
```

```
10
```

```
C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>
```

Q2)

```
bool checkNumberInPairs(List<int> numbers, int target) {  
    for (int i = 0; i < numbers.length - 1; i++) {  
        if (numbers[i] != target && numbers[i + 1] != target) {  
            return false;  
        }  
    }  
    return true;  
}  
  
void main() {  
    List<int> numbers = [1, 2, 2, 3, 3, 2, 2, 1];  
    int target = 2;  
  
    bool result = checkNumberInPairs(numbers, target);  
  
    if (result) {  
        print("$target appears in every pair of adjacent integers.");  
    } else {  
        print("$target does not appear in every pair of adjacent integers.");  
    }  
}
```

```
PROBLEMS  OUTPUT  TERMINAL  COMMENTS  DEBUG CONSOLE  Code + v  
Microsoft Windows [Version 10.0.19045.3208]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD\listPrime.dart"  
Enter a number:  
108  
Prime factors of 108 are: [2, 2, 3, 3, 3]  
  
C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>
```

Q3)

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

```
void main() {
```

```
    print("Enter a number:");
```

```
    int number = int.parse(stdin.readLineSync() ?? "");
```

```
    int numberOfFactors = countFactors(number);
```

```
    print("The number of factors of $number is $numberOfFactors.");
```

```
}
```

```
int countFactors(int number) {
```

```
    int count = 0;
```

```
    for(int i = 1; i <= number; i++) {
```

```
        if(number % i == 0) {
```

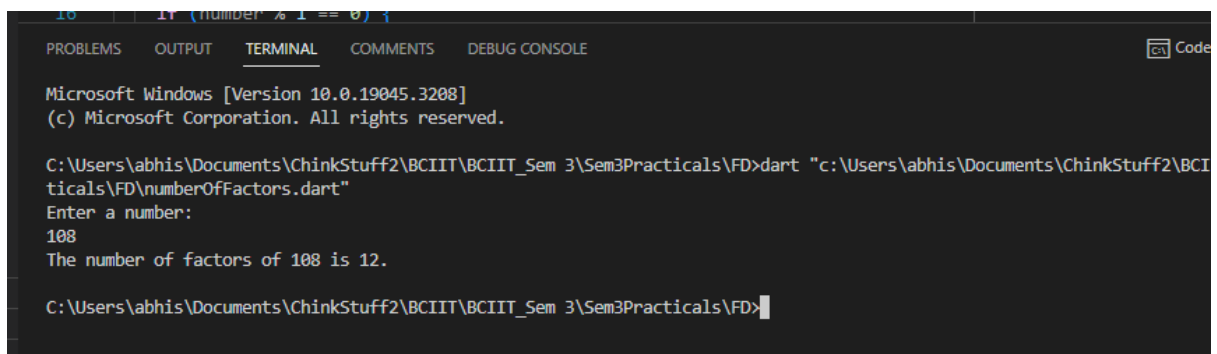
```
            count++;
```

```
        }
```

```
    }
```

```
    return count;
```

```
}
```



```
10 | if (number % i == 0) {  
PROBLEMS OUTPUT TERMINAL COMMENTS DEBUG CONSOLE Code  
Microsoft Windows [Version 10.0.19045.3208]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\BCI  
ticals\FD\numberOfFactors.dart"  
Enter a number:  
108  
The number of factors of 108 is 12.  
  
C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>
```

Q4)

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

```
void main() {
```

```
    print("Enter a list of numbers separated by spaces:");
```

```
    String input = stdin.readLineSync() ?? "";
```

```
    List<int> numbers = input
```

```
        .split('')
```

```
        .map((str) => int.tryParse(str) ?? 0) // Parse input to integers
```

```
        .toList();
```

```
    List<int> reversedNumbers = reverseDigitsInList(numbers);
```

```
    print("Reversed List: $reversedNumbers");
```

```
}
```

```
List<int> reverseDigitsInList(List<int> list) {
```

```
    List<int> reversedList = [];
```

```
    for (int number in list) {
```

```
        int reversedNumber = reverseDigits(number);
```

```
        reversedList.add(reversedNumber);
```

```
    }
```

```
    return reversedList;
```

```
}
```

```
int reverseDigits(int number) {
```

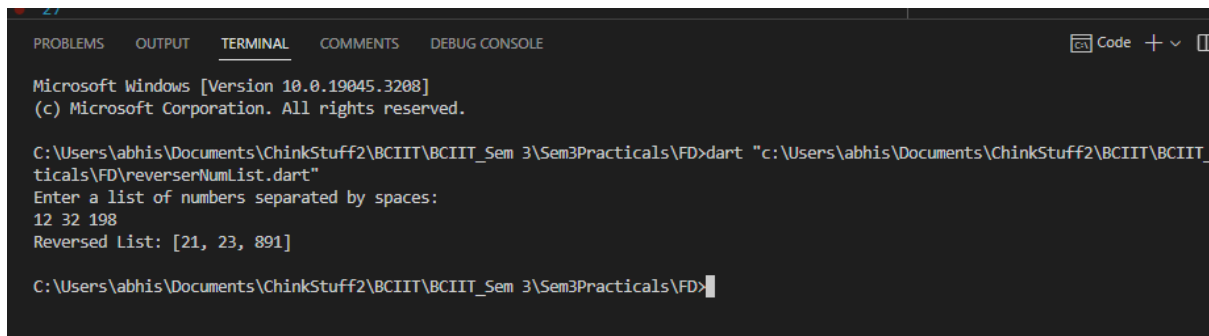
```

int reversed=0;

while (number !=0) {
    int digit= number % 10;
    reversed=reversed * 10 + digit;
    number~/= 10;
}

return reversed;
}

```



```

Microsoft Windows [Version 10.0.19045.3208]
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C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_
ticals\FD\reverserNumList.dart"
Enter a list of numbers separated by spaces:
12 32 198
Reversed List: [21, 23, 891]

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>

```

Q5)

```

bool checkNumberInPairs(List<int> numbers, int target) {
    for (int i = 0; i < numbers.length - 1; i++) {
        if (numbers[i] != target && numbers[i + 1] != target) {
            return false;
        }
    }
    return true;
}

```

```

void main() {
    List<int> numbers = [1, 2, 2, 3, 3, 2, 2, 1];
    int target = 2;
}

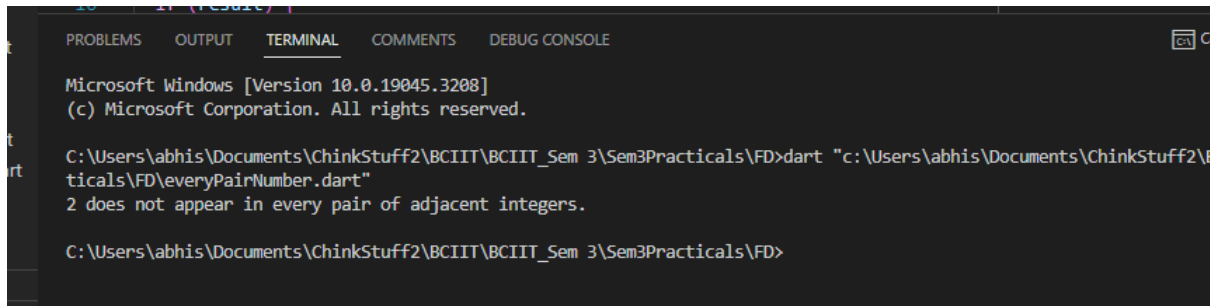
```

```

bool result = checkNumberInPairs(numbers, target);

if (result) {
    print("$target appears in every pair of adjacent integers.");
} else {
    print("$target does not appear in every pair of adjacent integers.");
}
}

```



```

Microsoft Windows [Version 10.0.19045.3208]
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C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\B
ticals\FD\everyPairNumber.dart"
2 does not appear in every pair of adjacent integers.

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>

```

Q6)

```

import 'dart:io';

void main() {
    List<int> array1 = [];
    List<int> array2 = [];

    // Input for the first list
    print("Enter the elements for the first list (separated by spaces):");
    String input1 = stdin.readLineSync() ?? "";
    array1 = input1.split(' ').map((str) => int.tryParse(str) ?? 0).toList();

    // Input for the second list
    print("Enter the elements for the second list (separated by spaces):");

```

```

String input2= stdin.readLineSync() ?? "";
array2 = input2.split(' ').map((str) => int.tryParse(str) ?? 0).toList();

// Manually sort both arrays
array1 = manualSort(array1);
array2 = manualSort(array2);

// Merge the sorted arrays
List<int> result = mergeSortedArrays(array1, array2);

print("Merged and Sorted Result: $result");
}

```

```

List<int> manualSort(List<int> list) {
  for (int i = 0; i < list.length - 1; i++) {
    for (int j = i + 1; j < list.length; j++) {
      if (list[i] > list[j]) {
        int temp = list[i];
        list[i] = list[j];
        list[j] = temp;
      }
    }
  }
  return list;
}

```

```

List<int> mergeSortedArrays(List<int> array1, List<int> array2) {
  List<int> result = [];

  int i = 0;
  int j = 0;

```

```

while (i < array1.length && j < array2.length) {
    if (array1[i] < array2[j]) {
        result.add(array1[i]);
        i++;
    } else {
        result.add(array2[j]);
        j++;
    }
}

// Add any remaining elements from both arrays
while (i < array1.length) {
    result.add(array1[i]);
    i++;
}

while (j < array2.length) {
    result.add(array2[j]);
    j++;
}

return result;
}

```

The screenshot shows a terminal window with the following content:

```

21 // Merge the sorted arrays

PROBLEMS OUTPUT TERMINAL COMMENTS DEBUG CONSOLE

Microsoft Windows [Version 10.0.19045.3208]
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C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\
ticals\FD\sortMergeList.dart"
Enter the elements for the first list (separated by spaces):
1 -4 12
Enter the elements for the second list (separated by spaces):
3 11 100 23
Merged and Sorted Result: [-4, 1, 3, 11, 12, 23, 100]

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>

```

The terminal window has tabs for PROBLEMS, OUTPUT, TERMINAL, COMMENTS, and DEBUG CONSOLE. The output shows the user entering two sorted arrays: [1, -4, 12] and [3, 11, 100, 23]. The program then outputs the merged and sorted result: [-4, 1, 3, 11, 12, 23, 100].

Q7)

```
class Mobile {  
    String brand;  
    String color;  
    double camera;  
  
    // Constructor to initialize the mobile object  
    Mobile(this.brand, this.color, this.camera);  
  
    // Method to print mobile details  
    void printDetails() {  
        print("Brand: $brand");  
        print("Color: $color");  
        print("Camera: $camera MP");  
    }  
}  
  
void main() {  
    // Initialize three mobile objects  
    Mobile mobile1 = Mobile("Samsung", "Black", 12.0);  
    Mobile mobile2 = Mobile("iPhone", "White", 16.0);  
    Mobile mobile3 = Mobile("Google Pixel", "Silver", 12.0);  
  
    // Print details of the mobile objects  
    print("Mobile 1 Details:");  
    mobile1.printDetails();  
  
    print("\nMobile 2 Details:");  
    mobile2.printDetails();  
}
```

```

print("\nMobile 3 Details:");
mobile3.printDetails();
}

```

```

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD\mobileClass.dart
Mobile 1 Details:
Brand: Samsung
Color: Black
Camera: 12.0 MP

Mobile 2 Details:
Brand: iPhone
Color: White
Camera: 16.0 MP

Mobile 3 Details:
Brand: 
Color: 
Camera: 

```

Q8)

```

import 'dart:io';

void main() {
  print("Enter a number:");
  int number = int.parse(stdin.readLineSync() ?? "");

  String words = numberToWords(number);

  print("In Words: $words");
}

String numberToWords(int number) {
  List<String> wordsList = [];

```

```
while (number > 0) {  
    int digit = number % 10;  
    wordsList.add(digitToWord(digit));  
    number /= 10;  
}  
  
return wordsList.reversed().join("");  
}
```

```
String digitToWord(int digit) {  
    switch (digit) {  
        case 0:  
            return "Zero";  
        case 1:  
            return "One";  
        case 2:  
            return "Two";  
        case 3:  
            return "Three";  
        case 4:  
            return "Four";  
        case 5:  
            return "Five";  
        case 6:  
            return "Six";  
        case 7:  
            return "Seven";  
        case 8:  
            return "Eight";  
        case 9:  
            return "Nine";  
    }  
}
```

```

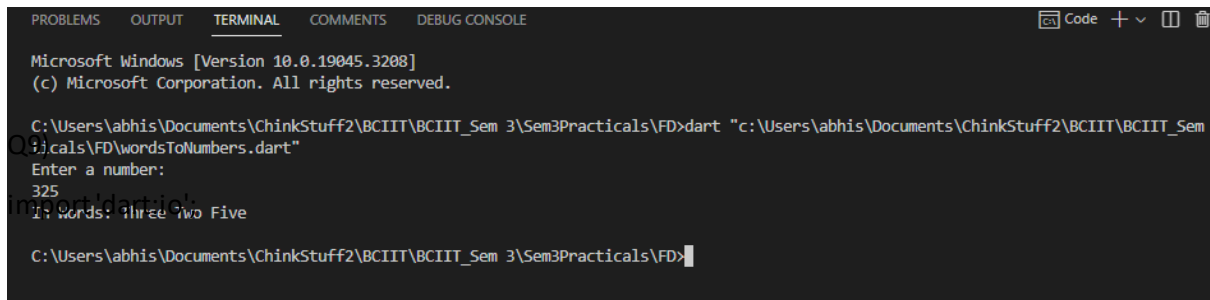
default:

    return "";

}

}

```



```

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C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\BCIIT_Sem3\Sem3Practicals\FD\wordsToNumbers.dart"
Enter a number:
325
In Words: Three Two Five

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>

```

```

void main() {

    print("Enter a number:");

    int number = int.parse(stdin.readLineSync() ?? "");

    String words = numberToWords(number);

    print("In Words: $words");

}

```

```

String numberToWords(int number) {

    if (number == 0) {

        return "Zero";

    }

```

```

List<String> units = [

    "",

    "One",

    "Two",

    "Three",

    "Four",

```

```
"Five",  
"Six",  
"Seven",  
"Eight",  
"Nine",  
"Ten",  
"Eleven",  
"Twelve",  
"Thirteen",  
"Fourteen",  
"Fifteen",  
"Sixteen",  
"Seventeen",  
"Eighteen",  
"Nineteen"  
];
```

```
List<String> tens = [  
    "",  
    "",  
    "Twenty",  
    "Thirty",  
    "Forty",  
    "Fifty",  
    "Sixty",  
    "Seventy",  
    "Eighty",  
    "Ninety"  
];
```

```
String result = "";
```

```

if (number >= 100) {
    result += units[number~/100] + " Hundred ";
    number %= 100;
}

```

```

if (number >= 20) {
    result += tens[number~/10] + " ";
    number %= 10;
}

```

```

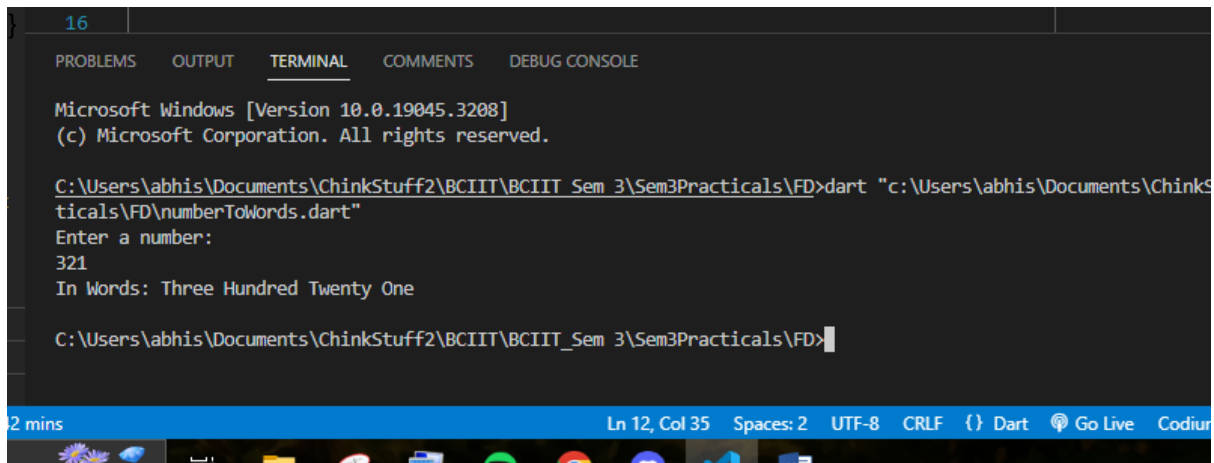
if (number > 0) {
    result += units[number];
}

```

```

return result.trim();

```



```

16
PROBLEMS OUTPUT TERMINAL COMMENTS DEBUG CONSOLE

Microsoft Windows [Version 10.0.19045.3208]
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C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD\numberToWords.dart"
Enter a number:
321
In Words: Three Hundred Twenty One

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>

```

Q10)

```

import 'dart:io';

```

```

void main() {
    print("Enter a number:");
}

```

```

int number = int.parse(stdin.readLineSync() ?? "");

String binaryEquivalent = decimalToBinary(number);

print("Binary Equivalent: $binaryEquivalent");
}

String decimalToBinary(int number) {
  if (number == 0) {
    return "0";
  }

  String binary = "";
  while (number > 0) {
    int remainder = number % 2;
    binary = "$remainder$binary";
    number ~/= 2;
  }

  return binary;
}

```

```

16
PROBLEMS OUTPUT TERMINAL COMMENTS DEBUG CONSOLE

Microsoft Windows [Version 10.0.19045.3208]
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C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>dart "c:\Users\abhis\Documents\Practicals\FD\decimalToBinary.dart"
Enter a number:
20
Binary Equivalent: 10100

C:\Users\abhis\Documents\ChinkStuff2\BCIIT\BCIIT_Sem 3\Sem3Practicals\FD>

```

All code pushed to my github repo:

<https://github.com/ShanksCodes/Sem3Practicals/tree/main/FD>