LAB-2

AIM : VARIABLES, DATA TYPES AND CONTROL STRUCTURES

Prac-1 : Temprature Conversion

Code :

```
import 'dart:io';
import 'package:lab_2/lab_2.dart' as lab_2;

double celciusToFehranhight(double celcius) {
  double feh = (celcius *  (9/5)) + 32;
  return feh;
}

double fehranhightToCelcius(double fehrenhight) {
  double cel = (fehrenhight - 32) * (5/9);
  return cel;
}

void Practical1() {
  double ans;

  while(true) {

    print(Process.runSync("cls", [], runInShell: true).stdout);

    print("***** Select *****");
    print("1. Celcius to Fehranhight");
    print("2. Fehranhight to Celcius");
    stdout.write("Enter choice : ");
    int choice = int.parse(stdin.readLineSync()!);

    switch(choice) {
      case 1 : {
        stdout.write("Enter Celcius : ");
        double celcius = double.parse(stdin.readLineSync()!);
        ans = lab_2.celciusToFehranhight(celcius);
        print("Fehrenhight = $ans");
        break;
      }

      case 2 : {
        stdout.write("Enter Fehrenhight : ");
```

```
      double fehrenhight = double.parse(stdin.readLineSync()!);
      ans = lab_2.fehranhightToCelcius(fehrenhight);
      print("Celcius = $ans");
      break;
    }

    default : {
      print("Enter valid choice !");
    }
   }
  }
}
```

Output :

```
F:\B.TECH\SEM-5\SDP\lab_2\TmpratureConversion\lab_2\bin>dart run lab_2.dart


***** Select *****
1. Celcius to Fehranhight
2. Fehranhight to Celcius
Enter choice : 1
Enter celcius : 5
Fehrenhight = 41.0


***** Select *****
1. Celcius to Fehranhight
1. Celcius to Fehranhight
1. Celcius to Fehranhight
2. Fehranhight to Celcius
Enter choice : 2
Enter celcius : 41
Celcius = 5.0


***** Select *****
1. Celcius to Fehranhight
2. Fehranhight to Celcius
Enter choice :
```

Prac-2 : Number Guesing Game

Code :

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

void main(List<String> arguments) {
  int guess;
  Random random = Random();
  int ans = random.nextInt(100);

  do {
    print("Enter your Guess : ");
    guess = int.parse(stdin.readLineSync()!);

    if(guess < ans) {
      print("Too low!");
    } else if(guess > ans) {
      print("Too High!");
    }
  } while(guess != ans);

  print("You got it!");
}
```

Output :

```
PS F:\B.TECH\SEM-5\SDP\lab_2\number_guesing_game\bin> dart run number_guesing_game.dart
Enter your Guess :
10
Too low!
Enter your Guess :
90
Too low!
Enter your Guess :
95
Too low!
Enter your Guess :
98
Too High!
Enter your Guess :
97
You got it!
PS F:\B.TECH\SEM-5\SDP\lab_2\number_guesing_game\bin>
```

Prac-3 : Mounty Hall

Code :

```
import 'dart:math';

void main(List<String> arguments) {
  const int trails = 1000000;
  int correct = 0;
  Random rand = Random();

  for(int i = 0; i < trails; i++) {
    int randDoor = rand.nextInt(4);
    int guess = 1;
    int eliminated;

    if(randDoor == 2) {
      eliminated = 3;
    } else if(randDoor == 3) {
      eliminated = 2;
    } else {
      eliminated = rand.nextInt(2) + 2;
    }

    if(eliminated == 2) {
      guess = 3;
    } else if(eliminated == 3) {
      guess = 2;
    }

    if(guess == randDoor) {
      correct++;
    }
  }

  print("The percentage of correct guesses was ${(correct / trails) * 100}%");
}
```

Output :

```
PS F:\B.TECH\SEM-5\SDP\lab_2\monty_hall\bin> dart run monty_hall.dart
The percentage of correct guesses was 49.967099999999995%
```

Prac-4 : Pi Calculator

Code :

```
// ignore_for_file: constant_identifier_names

import 'dart:math';

void main(List<String> arguments) {
  const int iterations = 100000;
  double series = 1.0;
  double denominator = 3.0;
  double negate = -1.0;
  const double PI = 3.1415926535897932;

  for(int i = 0; i < iterations; i++) {
    series += (negate * (1 / denominator));
    denominator += 2.0;
    negate *= -1.0;
  }

  double pi = 4 * series;
  print("We calculated pi as $pi");
  print("The real pi is $PI");
  print("We were off by ${PI - pi}");
}
```

Output :

```
PS F:\B.TECH\SEM-5\SDP\lab_2\pi_calculator\bin> dart run pi_calculator.dart
We calculated pi as 3.1416026534897203
The real pi is 3.141592653589793
```

Prac-5 : Math Test

Code :

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

void main(List<String> arguments) {
  Random rand = Random();
  int correctAnswer = 0, userAnswer, opr1, opr2, operation;
  int questionAttempted = 0, numCorrect = 0;

  while(true) {
    operation = rand.nextInt(3);
    opr1 = rand.nextInt(11);
```

```
    opr2 = rand.nextInt(11);

    switch(operation) {
      case 0 :
        print("$opr1 + $opr2 = ");
        correctAnswer = opr1 + opr2;
        break;

      case 1:
        print("$opr1 + $opr2 = ");
        correctAnswer = opr1 + opr2;
        break;

      case 2:
        print("$opr1 + $opr2 = ");
        correctAnswer = opr1 + opr2;
        break;
    }

    String temp = stdin.readLineSync()!;

    try {
      userAnswer = int.parse(temp);
    } on FormatException {
      print("Thanks for playing!");
      print("You got $numCorrect out of $questionAttempted correct.");
      break;
    }

    if(userAnswer == correctAnswer) {
      numCorrect++;
      print("Correct!");
    } else {
      print("Wrong!");
    }

    questionAttempted++;
  }
}
```

Output :

```
PS F:\B.TECH\SEM-5\SDP\lab_2\math_test\bin> dart run math_test.dart
3 + 0 =
3
Correct!
4 + 10 =
13
Wrong!
4 + 2 =
exit
Thanks for playing!
You got 1 out of 2 correct.
PS F:\B.TECH\SEM-5\SDP\lab_2\math_test\bin>
```