Assignment # 01

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Q.1: Create two integer variables length and breadth and assign values then check if they are square values or rectangle values.

ie: if both values are equal then it's square otherwise rectangle.

Source Code:

```
void main() {
  int length = 4;
  int breadth = 6;

  if (length == breadth) {
    print("It's a square.");
  } else {
    print("It's a rectangle.");
  }
}
```

Output:

```
flutter: It's a rectangle.
```

Q.2: Take two variables and store age then using if/else condition to determine oldest and youngest among them.

Source Code:

```
void main() {
  int age1 = 25;
  int age2 = 30;

  if (age1 > age2) {
    print("Age 1 is the oldest.");
    print("Age 2 is the youngest.");
  } else if (age2 > age1) {
```

```
    print("Age 2 is the oldest.");
    print("Age 1 is the youngest.");
  } else {
    print("Both ages are the same.");
  }
}
```

Output:

```
flutter: Age 2 is the oldest.
flutter: Age 1 is the youngest.
```

Q.3: A student will not be allowed to sit in exam if his/her attendance is less than 75%. Create integer variables and assign value:

Number of classes held = 16,

Number of classes attended = 10,

and print percentage of class attended.

Is student is allowed to sit in exam or not?

Source Code:

```
void main() {
  int numberOfClassesHeld = 16;
  int numberOfClassesAttended = 10;

  double attendancePercentage =
      (numberOfClassesAttended / numberOfClassesHeld) * 100;

  print("Attendance Percentage: $attendancePercentage%");

  if (attendancePercentage >= 75) {
    print("The student is allowed to sit in the exam.");
  } else {
    print("The student is not allowed to sit in the exam.");
  }
}
```

Output:

```
flutter: Attendance Percentage: 62.5%
flutter: The student is not allowed to sit in the exam.
```

Q.4: Create integer variable assign any year to it and check if a year is leap year or not.

If a year is divisible by 4 then it is leap year but if the year is century year like 2000, 1900, 2100 then it must be divisible by 400.

i.e: Use % (modulus) operator.

Source Code:

```
void main() {
  int year = 1600;

  if (year % 4 == 0) {
    if (year % 100 == 0) {
      if (year % 400 == 0) {
        print("$year is a leap year.");
      } else {
        print("$year is not a leap year.");
      }
    } else {
      print("$year is a leap year.");
    }
  } else {
    print("$year is not a leap year.");
  }
}
```

Output:

```
flutter: 1600 is a leap year.
```

Q.5 Write a program to read temperature in centigrade and display a suitable message according to temperature:

You have num variable temperature = 42;

Now print the message according to temperature:

temp < 0 then Freezing weather

temp 0-10 then Very Cold weather

temp 10-20 then Cold weather

temp 20-30 then Normal in Temp

temp 30-40 then Its Hot

temp >=40 then Its Very Hot

Source Code:

```
void main() {
  int temperature = 42;

  if (temperature < 0) {
    print("Freezing weather");
  } else if (temperature >= 0 && temperature <= 10) {
    print("Very Cold weather");
  } else if (temperature > 10 && temperature <= 20) {
    print("Cold weather");
  } else if (temperature > 20 && temperature <= 30) {
    print("Normal in Temp");
  } else if (temperature > 30 && temperature <= 40) {
    print("It's Hot");
  } else {
    print("It's Very Hot");
  }
}
```

Output:

```
flutter: It's Very Hot
```

Q.6: Write a program to check whether an alphabet is a vowel or consonant.

Source Code:

```
void main() {
  String alphabet = 'a';

  if (alphabet == 'a' ||
```

```
    alphabet == 'e' ||
    alphabet == 'i' ||
    alphabet == 'o' ||
    alphabet == 'u' ||
    alphabet == 'A' ||
    alphabet == 'E' ||
    alphabet == 'I' ||
    alphabet == 'O' ||
    alphabet == 'U') {
  print("$alphabet is a vowel.");
 } else {
  print("$alphabet is a consonant.");
 }
}
```

Output:

```
flutter: a is a vowel.
```

Q.7: Write a program to calculate and print the Electricity bill of a given customer. Create variable for customer id, name, unit consumed by the user, bill_amount and print the total amount the customer needs to pay. The charge are as follow :

Unit Charge/unit

upto 199 @1.20

200 and above but less than 400 @1.50

400 and above but less than 600 @1.80

600 and above @2.00;

Test Data :

id: 1001

name: James

units: 800

Expected Output :

Customer IDNO :1001

Customer Name :James

unit Consumed :800

Amount Charges @Rs. 2.00 per unit : 1600.00

Net Bill Amount : 1600.00

Source Code:

```
void main() {
  int customerId = 1001;
  String customerName = "James";
  int unitsConsumed = 800;
  double chargePerUnit = 0.0;
  double billAmount = 0.0;

  if (unitsConsumed <= 199) {
    chargePerUnit = 1.20;
  } else if (unitsConsumed >= 200 && unitsConsumed < 400) {
    chargePerUnit = 1.50;
  } else if (unitsConsumed >= 400 && unitsConsumed < 600) {
    chargePerUnit = 1.80;
  } else if (unitsConsumed >= 600) {
    chargePerUnit = 2.00;
  }

  billAmount = unitsConsumed * chargePerUnit;

  print("Customer IDNO: $customerId");
  print("Customer Name: $customerName");
  print("Units Consumed: $unitsConsumed");
  print("Amount Charges @Rs. $chargePerUnit per unit: $billAmount");
  print("Net Bill Amount: $billAmount");
}
```

Output:

```
flutter: Customer IDNO: 1001
flutter: Customer Name: James
flutter: Units Consumed: 800
flutter: Amount Charges @Rs. 2.0 per unit: 1600.0
flutter: Net Bill Amount: 1600.0
```

Q8: Create a marksheet using operators of at least 5 subjects and output should have Student Name, Student Roll Number, Class, Percentage, Grade Obtained etc.

i.e: Percentage should be rounded upto 2 decimal places only.

Source Code:

```
void main() {
  String studentName = "Hanzala";
  int rollNumber = 1001;
  String className = "Class 10";
  List<int> marks = [85, 90, 75, 92, 88]; // Marks obtained in 5 subjects
  int totalMarks = marks.reduce((a, b) => a + b);
  double percentage = (totalMarks / (marks.length * 100)) * 100;
  String grade = getGrade(percentage);

  print("Student Name: $studentName");
  print("Roll Number: $rollNumber");
  print("Class: $className");
  print("Marks Obtained: $marks");
  print("Total Marks: ${marks.length * 100}");
  print("Percentage: ${percentage.toStringAsFixed(2)}%");
  print("Grade: $grade");
}

String getGrade(double percentage) {
  if (percentage >= 90) {
    return "A+";
  } else if (percentage >= 80) {
    return "A";
  } else if (percentage >= 70) {
    return "B";
  } else if (percentage >= 60) {
    return "C";
  } else if (percentage >= 50) {
    return "D";
```

```
  } else {
    return "F";
  }
}
```

Output:

```
flutter: Student Name: Hanzala
flutter: Roll Number: 1001
flutter: Class: Class 10
flutter: Marks Obtained: [85, 90, 75, 92, 88]
flutter: Total Marks: 500
flutter: Percentage: 86.00%
flutter: Grade: A
```

Q9: Check if the number is even or odd, If number is even then check if this is divisible by 5 or not & if number is odd then check if this is divisible by 7 or not.

Source Code:

```
void main() {
  int number = 140;

  if (number % 2 == 0) {
    print("$number is even.");

    if (number % 5 == 0) {
      print("$number is divisible by 5.");
    } else {
      print("$number is not divisible by 5.");
    }
  } else {
    print("$number is odd.");

    if (number % 7 == 0) {
      print("$number is divisible by 7.");
    } else {
      print("$number is not divisible by 7.");
    }
  }
}
```

Output:

```
flutter: 140 is even.
flutter: 140 is divisible by 5.
```

Q10: Write a program that takes three numbers from the user and prints the greatest number & lowest number.

Source Code:

```dart
import 'dart:io';

void main() {
  print("Enter the first number: ");
  double number1 = double.parse(stdin.readLineSync() ?? '');

  print("Enter the second number: ");
  double number2 = double.parse(stdin.readLineSync() ?? '');

  print("Enter the third number: ");
  double number3 = double.parse(stdin.readLineSync() ?? '');

  double greatestNumber = findGreatestNumber(number1, number2, number3);
  double lowestNumber = findLowestNumber(number1, number2, number3);

  print("The greatest number is: $greatestNumber");
  print("The lowest number is: $lowestNumber");
}

double findGreatestNumber(double num1, double num2, double num3) {
  double greatest = num1;

  if (num2 > greatest) {
    greatest = num2;
  }

  if (num3 > greatest) {
    greatest = num3;
  }
```

```
  return greatest;
}

double findLowestNumber(double num1, double num2, double num3) {
  double lowest = num1;

  if (num2 < lowest) {
    lowest = num2;
  }

  if (num3 < lowest) {
    lowest = num3;
  }

  return lowest;
}
```

Output:

```
Enter the first number:
2
Enter the second number:
34
Enter the third number:
54
The greatest number is: 54.0
The lowest number is: 2.0
```

Q11: Write a program to calculate root of any number.

i.e: $\sqrt{y} = y^{½}$

Source Code:

```
import 'dart:math';

void main() {
  double number = 16;
  double squareRoot = sqrt(number);

  print("The square root of $number is $squareRoot");
}
```

Output:

```
The square root of 16.0 is 4.0
```

Q12: Write a program to convert Celsius to Fahrenheit .

i.e: Temperature in degrees Fahrenheit (°F) = (Temperature in degrees Celsius (°C) * 9/5) + 32

Source Code:

```
void main() {
  double celsius = 25;
  double fahrenheit = (celsius * 9 / 5) + 32;

  print("$celsius°C is equal to $fahrenheit°F");
}
```

Output:

```
25.0°C is equal to 77.0°F
```