Assignment 2

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(1) What are the various types of operators in dart? Explain with Examples.

○ Arithmetic Operators

Arithmetic operator which include addition, Subtraction, Multiplication, division, modulus (+,-, *, /, %)

```
void main() {
    num a = 5;
    num b = 9;
    //addition
    num add = a + b;
    //subtraction
    num sub = a - b;
    //multiplication
    num mul = a * b;
    //division
    num div = a / b;
    //modulus
    num mod = a % b;
    print("number a = $a \nnumber b = $b ");
    print("Addition = $add");
    print("subtraction = $sub");
    print("multiplication = $mul");
    print("division = $div");
    print("modulus = $mod");
}
```

```
Console

number a = 5
number b = 9
Addition = 14
subtraction = -4
multiplication = 45
division = 0.5555555555555556
modulus = 5
```

○ Relational Operators

Includes

Greater than	>
Less than	<
Greater than or equal to	>=
less than equal to	<=
Equal to	==
Not Equal to	!=

Usually these Relational operators are used to compare 2 values

```
void main() {
    num a = 5;
    num b = 9;

    print("number a = $a \nnumber b = $b ");
    if (a > b) {
        print("a is greater than b ");
    }
    if (a < b) {
        print("a is less than b ");
    }
    if (a >= b) {
        print("a is greater than or equal to b ");
```

```
Console

number a = 5
number b = 9
a is less than b
a is less than or equal to b
a not equal to b
```

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```
 }
 if (a <= b) {
     print("a is less than or equal to b");
 }
 if (a == b) {
     print("a equals to b");
 }
 if (a != b) {
     print("a not equal to b");
 }
}
```

- **Logical operators**

Includes

&& : and operator

|| : or operator

! : not operator

```
Console

number a = 5
number b = 9
a is less than b OR a equals to b
```

```
void main() {
    num a = 5;
    num b = 9;

    print("number a = $a \nnumber b = $b ");
    if (a > b&& a != b) {
        print("a is greater than b AND a is not equal to b ");
    }
    if (a < b || a == b) {
        print("a is less than b OR a equals to b ");
    }
}
```

(2) What will be the output in variables a, b & result after execution of the following script:

a. var a = 2, b = 1;

b. var result = --a - --b + ++b + b--; Explain the output at each stage:

c. --a; variable a value decremented by 1 , 2 becomes 1

d. --a - --b; a becomes 1 , and b become 0, so subtraction result = 1

e. --a - --b + ++b; +1 increment in b and addition to previous step result = 2

f. --a - --b + ++b + b-- ; b value 1 is added in previous result 2 which becomes 3 ;

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(3) Cost of one movie ticket is 600 PKR. Write a script to store ticket price in a variable & calculate the cost of buying 5 tickets to a movie.

```
void main() {
    num  ticket_price = 600;

    print("  Cost of one movie ticket is == $ticket_price PKR  \n");
    print("  Cost for Five movie tickets will be == ${ticket_price*5} PKR  ");
   }
```

```
Console

    Cost of one movie ticket is == 600 PKR

    Cost for Five movie tickets will be == 3000 PKR
```

(4) How to get difference of lists in Dart?

Problem: Consider you have two lists [1,2,3,4,5,6,7] and [3,5,6,7,9,10]. How would you get the difference as output? E.g. [1, 2, 4].

```
void main() {
    List lst1 = [1, 2, 3, 4, 5, 6, 7];
    List lst2 = [3, 5, 6, 7, 9, 10];

    lst1.removeWhere((e) = >
lst2.contains(e));
    print("List1 == $lst1  ");
    print("List1 == $lst2  \n");
    print("list1 difference list 2 $lst1
");
}
```

```
Console

  List1 == [1, 2, 4]
  List1 == [3, 5, 6, 7, 9, 10]

  list1 difference list 2 [1, 2, 4]
```

(5) What is a difference between these operators "?? And?"

Both are Conditional Operators

- **?** It is a simple version of if-else statement. If the condition is true than expersion1 is executed else expersion2 is executed
- **??** If expersion1 is non-null returns its value else returns expression2 value.

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(6) What are the data types supported in Dart? Explain with Examples.

Data Type	Keyword	Description
Number	int, double, num	Numbers in Dart are used to represent numeric literals
Strings	String	Strings represent a sequence of characters
Booleans	bool	It represents Boolean values true and false
Lists	List	It is an ordered group of objects
Maps	Map	It represents a set of values as key-value pairs

```dart
void main() {
    int a = 5;
    double b = 6;
    num c = 65;
    String name = "Amjad";
    bool check = false;
    List lst = [3, 5, 7, 9, 11, 13, 15];
    Map data = { 'name 1':'Amjad','name2' : 'Ali','name3' : 'Khan' };
    print(" Checking variable type through runtimeType\n");

    print(" variable 'a' has integer type     :: ${a.runtimeType}  ");
    print(" variable 'b' has integer type     :: ${b.runtimeType}  ");
    print(" variable 'c' has integer type     :: ${c.runtimeType}  ");

    print(" variable 'name' has integer type  :: ${name.runtimeType}  ");
    print(" variable 'check' has integer type :: ${check.runtimeType}  ");
    print(" variable 'lst' has integer type   :: ${lst.runtimeType}  ");
    print(" variable 'data' has integer type  :: ${data.runtimeType}  ");
}
```

```
Console

   Checking variable type through runtimeType

   variable 'a' has integer type     :: int
   variable 'b' has integer type     :: int
   variable 'c' has integer type     :: int
   variable 'name' has integer type  :: String
   variable 'check' has integer type :: bool
   variable 'lst' has integer type   :: JSArray<dynamic>
   variable 'data' has integer type  :: JsLinkedHashMap<dynamic, dynamic>
```

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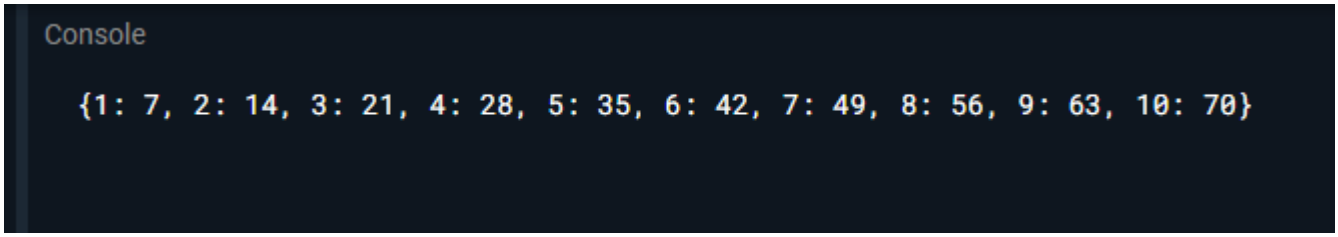
(7) Solve:

a. First declare an array and assign the numbers of the table of 7.
b. Second declare another array and assign the numbers 1-10
c. Now write down the table of 7 using map.fromiterables method.

```
void main() {
    List table7 = [7, 14, 21, 28, 35, 42, 49, 56, 63, 70];
    List numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];

    Map data = Map.fromIterables(numbers, table7);
    print(data);
  }
```



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(8) Write a program that

a. Store correct password in a JS variable.
b. Asks user to enter his/her password
c. Validate the two passwords:
d. Check if user has entered password. If not, then give message “Please enter your password”
e. Check if both passwords are same. If they are same, show message “Correct! The password you
f. entered matches the original password”. Show “Incorrect password” otherwise.

```
void main() {
    var correct_pw = "Amjad1221";
    var usr_pw = "Amjad1221";
    if (usr_pw.isEmpty) {
        print("No Password Entered \nPlease enter your password");
    }
    else {
        print(" password you entered is $usr_pw");
    }
    if (usr_pw.isNotEmpty && correct_pw == usr_pw) {
        print("Correct! Password");
    }
    else if (usr_pw.isNotEmpty) {
        print("Incorrect password");
    }
```

```
Console

No Password Entered
Please enter your password
```

```
Console

 password you entered is Amjad1234
Incorrect password
```

```
Console

 password you entered is Amjad1221
Correct! Password
```

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(9) Write a program to store 3 student names in an array. Take another array to store score of these three students. Assume that total marks are 500 for each student, display the scores & percentages of students.

```
void main() {

    List names = ["Amjad", "Waleed", "Saad"];
    List score = [350, 450, 429];
    int total_Marks = 500;
    for (var num = 0; num < 3; num++) {
        print("Marks of " + names[num] + ": ${score[num]}");
        print("Percentage of " + names[num] + ": ${score[num] / total_Marks * 100}
%\n");
    }}
```

```
Console

Marks of Amjad: 350
Percentage of Amjad: 70 %

Marks of Waleed: 450
Percentage of Waleed: 90 %

Marks of Saad: 429
Percentage of Saad: 85.8 %
```

(10) Declare 5 legal & 5 illegal variable names.

LEGAL	NON-LEGAL
Name	1name
Name1	Na?me
Usr_pw	Na.me
Nam1e	var
Nam#e	User pw

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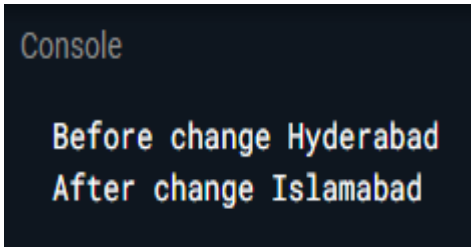
(11) Write a program to replace the “Hyder” to “Islam” in the word “Hyderabad” and display the result.

```
void main() {

    var city = "Hyderabad";
    print("Before change $city");
    city = city.replaceAll("Hyder",
"Islam");
    print("After change $city");
  }
```



(12) Write a program to generate your K-Electric bill 7. All the amounts should be rounded off to 2 decimal places. Display the following fields:

a. Customer Name
b. Current Month
c. Number of units
d. Charges per unit
e. Net Amount Payable (within Due Date)
f. Late Payment Surcharge
g. Gross Amount Payable (after Due Date)

Where, Net Amount Payable (within Due Date) = Number of units * Charges per unit & Gross Amount Payable (after Due Date) = Net Amount + Late Payment Surcharge

```
void main() {

    var customerName = "Amjad Ali Khan";
    var currentMonth = "August";
    var chargesPerUnit = 20;
    var numberOfUnits = 256;
    var netAmountPayable = chargesPerUnit * numberOfUnits;
    var latePaymentSurcharge = (netAmountPayable * 0.10);
    var grossAmountPayable = netAmountPayable +
latePaymentSurcharge;
```

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```
    print("  ============================== ");
    print("  ========== KE Bill ========== \n\n");

    print("Customer Name:  $customerName");
    print("Current Month: $currentMonth");
    print("Number of units: $numberOfUnits");
    print("Charges per unit: $chargesPerUnit");
    print("Net Amount Payable (within Due Date) : Rs
${netAmountPayable.toStringAsFixed(2)}");
    print("Late Payment Surcharge:
${latePaymentSurcharge.toStringAsFixed(2)}");
    print("Gross Amount Payable (after Due Date) : Rs
${grossAmountPayable.toStringAsFixed(2)}");
}
```

Console

```
    ==============================
    ========== KE Bill ==========


  Customer Name:  Amjad Ali Khan
  Current Month: August
  Number of units: 256
  Charges per unit: 20
  Net Amount Payable (within Due Date):  5120.00
  Late Payment Surcharge:  512.00
  Gross Amount Payable (after Due Date):  5632.00
```

\

OR

(13) Write a program that shows the message “First fifteen days of the month” if the date is less than 16th of the month else shows “Last days of the month”.

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Best of Luck!