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

The following are the various types of operators in Dart:

1. Arithmetic Operators
2. Relational Operators
3. Type Test Operators
4. Bitwise Operators
5. Assignment Operators
6. Logical Operators
7. Conditional Operator
8. Cascade Notation Operator

|  |  |  |
| --- | --- | --- |
| + | Addition | Use to add two operands |
| – | Subtraction | Use to subtract two operands |
| -expr | Unary Minus | It is Use to reverse the sign of the expression |
| \* | Multiply | Use to multiply two operands |
| / | Division | Use to divide two operands |
| ~/ | Division | Use two divide two operands but give output in integer |
| % | Modulus | Use to give remainder of two operands |

|  |  |  |
| --- | --- | --- |
| > | Greater than | Check which operand is bigger and give result as boolean expression. |
| < | Less than | Check which operand is smaller and give result as boolean expression. |
| >= | Greater than or equal to | Check which operand is greater or equal to each other and give result as boolean expression. |
| <= | less than equal to | Check which operand is less than or equal to each other and give result as boolean expression. |
| == | Equal to | Check whether the operand are equal to each other or not and give result as boolean expression. |
| != | Not Equal to | Check whether the operand are not equal to each other or not and give result as boolean expression. |
| is | is | Gives boolean value true as output if the object has specific type |
| is! | is not | Gives boolean value false as output if the object has specific type |
| & | Bitwise AND | Performs bitwise and operation on two operands. |
| | | Bitwise OR | Performs bitwise or operation on two operands. |
| ^ | Bitwise XOR | Performs bitwise XOR operation on two operands. |
| ~ | Bitwise NOT | Performs bitwise NOT operation on two operands. |
| << | Left Shift | Shifts a in binary representation to b bits to left and inserting 0 from right. |
| >> | Right Shift | Shifts a in binary representation to b bits to left and inserting 0 from left. |

|  |  |  |
| --- | --- | --- |
| = | Equal to | Use to assign values to the expression or variable |
| ??= | Assignment operator | Assign the value only if it is null |
| && | And Operator | Use to add two conditions and if both are true than it will return true. |
| || | Or Operator | Use to add two conditions and if even one of them is true than it will return true. |
| ! | Not Operator | It is use to reverse the result. |
| condition ? expersion1 : expersion2 | Conditional Operator | It is a simple version of if-else statement. If the condition is true than expersion1 is executed else expersion2 is executed. |
| expersion1 ?? expersion2 | Conditional Operator | If expersion1 is non-null returns its value else returns expression2 value. |
| .. | cascading Method | It is used to perform multiple methods on the same object. |

/\* **Question 2(c)** in this the value of a is decrement we also do a decrement of a in part a so that's why

we get 0 \*/

print("</> Question 2 (c)");

var result\_c = --a;

print(result\_c);

/\* **Question 2(d)** in this the value of a & b is decrement and also do subtraction. we also do a decrement of a & b in part a so that's why

we get 0 \*/

print("</> Question 2 (d)");

var result\_d = --a - --b;

print(result\_d);

/\* **Question 2(e)** in this the value of a & b is decrement and also do subtraction of a & b decrement value and then the result of a & b decrement values answer will plus to pre-increment of b. we also do a decrement of a & b in part a so that's why

we get -1 \*/

print("</> Question 2 (e)");

var result\_e = --a - --b + ++b;

print(result\_e);

/\* **Question 2(f)** in this the value of a & b is pre-decrement and also do subtraction of a & b pre-decrement value and then the result of a & b decrement values answer will plus to pre-increment of b and then add all result with post decrement value of okay we also do a decrement of a & b in part a so that's why

we get -3 \*/

print("</> Question 2 (f)");

var result\_f = --a - --b + ++b + b--;

print(result\_f);

**//Question 3**

print("</> Question 3");

print("Cost of one movie ticket is 600 PKR.");

var price = 600;

var last = price\*5;

print("The price of 5 tickets are: $last PKR");

**//Question 4**

print("</> Question 4");

List<int> first = [1,2,3,4,5,6,7];

List<int> second = [3,5,6,7,9,10];

List<int> difference = first.toSet().difference(second.toSet()).toList();

print(difference.toString());

**//Question 5**

Conditional Expressions

Dart has two operators that let you evaluate expressions that might otherwise require ifelse statements − condition ? expr1 : expr2

If condition is true, then the expression evaluates expr1 (and returns its value); otherwise, it evaluates and returns the value of expr2.

expr1 ?? expr2

If expr1 is non-null, returns its value; otherwise, evaluates and returns the value of expr2

//?

var exp\_1 = 10;

var exp\_2 = exp\_1 > 12 ? "value greater than 10":"value lesser than or equal to 10";

print(exp\_2);

//??

var exp\_11 = null;

var exp\_12 = 12;

var res = exp\_11 ?? exp\_12;

print(res);

**//Question 6**

print("Question #05");

int abc = 23;

print("Output of Example of int $abc");

double abcd = 23.2323;

print("Output of Example of double $abcd");

num abcde = 232;

print("Output of Example of num $abcde");

String hello = "Abu Talha 021";

print("Output of Example of String $hello");

bool calculation;

calculation = 12>5;

print("Output of Example of Boolean $calculation");

}

**//Question 7**

print("Question 7 ");

print("Question 7(a) ");

var table\_7 = [7,14,21,28,35,42,49,56,63,70];

print(table\_7);

print("Question 7(b) ");

var number\_10 = [1,2,3,4,5,6,7,8,9,10];

print(number\_10);

print("Question 7(c) ");

var table = Map.fromIterables(number\_10, table\_7);

print(table);

**//Question 8**

var org\_password = "Hello786";

int lenOfOrg = org\_password.length;

if (lenOfOrg >= 8 && lenOfOrg <= 16) {

print("Enter your password");

var user\_pass = "786Hello";

int len = user\_pass!.length;

if (len >= 8 && lenOfOrg <= 16) {

if (user\_pass == "") {

print("Please Enter password");

} else if (org\_password == user\_pass) {

print(

"Correct! The password you entered matches the original password");

} else {

print("Incorrect password");

}

} else if (len < 8) {

print("Password strength must be between 8-16 characters ");

}

} else {

print("value you stored is less than 8 characters/n");

}

**//Question 9**

List<dynamic> names = ["\nAtif", "\nDaniyal", "\nTalha"];

List<dynamic> scores = [250, 300, 500];

var per1 = (scores[0] / 500) \* 100;

var per2 = (scores[1] / 500) \* 100;

var per3 = (scores[2] / 500) \* 100;

List<dynamic> Data = [

"${names[0]} score is ${scores[0]} and percentage is $per1 %",

"${names[1]} score is ${scores[1]} and percentage is $per2 %",

"${names[2]} score is ${scores[2]} and percentage is $per3 % \n"

];

print(Data);

**//Question 10**

Question # 10

LEGAL VARIABLE NAMES

var ABC = 222

var A2 = “Pakistan”

var A\_BC = 888

var A# = “me”

var FOR = “ her “

ILLEGAL VARIABLE NAMES

var 123 = ABC

var 2A = “Pakistan”

var A-BC = 123

Var A = “ me “

Var for = “ her “

**//Question 11**

print("Question 11");

var word = "Hyderabad";

var updated = word.replaceRange(0, 5, "Islam");

print(updated);

**//Question 12**

print("Question 12");

double charges\_per\_unit = 100.15;

double tot\_units = 200.02;

double net\_ammount =

(((charges\_per\_unit \* tot\_units) \* 100)..round()) / 100;

int surcharge = 500;

double gross\_ammount =

((((charges\_per\_unit \* tot\_units) + surcharge) \* 100)..round())/ 100;

print("\t\tK-ELECTRIC BILL 7\n\n");

print("Enter name of customer");

String cus\_name = "Syed Murtaza Hussain";

print("Enter month");

String month = "May";

int len = month.length;

print("\n\n");

print("> Name: $cus\_name");

print("> Current month: $month");

print("> Charges per unit = $charges\_per\_unit");

print("> Net ammount payable within due date: $net\_ammount");

print("> Late payment surcharge: $surcharge");

print("> Gross ammount payable after due date: $gross\_ammount");

**//Question 13**

print("Question 13");

int date = int.parse("22");

if (date > 0 && date <= 15) {

print("First 15 days of the month");

} else if (date >= 16 && date <= 31) {

print("Last days of the month");

} else if (date == "") {

print("Enter date");

} else {

print("Enter proper date");

}