BCA Optimized Notes by Yash

Semester IV - Dart Programs

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Unit 1 - Chapter 2

1) Basics

Code

```
void main() {
     int var1 = 10;
     double var2 = 0.2;
     bool var3 = false;
     string var4 = "0", var5 = "SYBCA - Dart";
     print(var1);
     print(var2);
     print(var3);
     print(var4);
     print(var5);
}
```

Output

2) Arithmetic Operations

Code

```
void main() {
     int var1 = 20;
     int var2 = 10;
     print(var1 + var2);
     print(var1 - var2);
     print(var1 * var2);
     print(var1 / var2);
     print(var1 % var2);
}
```

Output

3) Map

First Method

```
void main() {
     var data = {"class":"SYBCA", "stream":"CS", "college":"SK
Somaiya College"};
```

```
      print(data);
      print(data["college"]);
      print(data["class"]);
      data["location"] = "Vidyavihar";
      print(data);
      print(data["location"]);
}
```

Output

```
Yash Dart dart program3-1.dart
{class: SYBCA, stream: CS, college: SK Somaiya College}
SK Somaiya College
SYBCA
{class: SYBCA, stream: CS, college: SK Somaiya College, location: Vidyavihar}
Vidyavihar
```

Second Method

```
void main() {
      var data = new Map();
      data["college"] = "SK Somaiya College";
      data["class"] = "SYBCA";
      data["stream"] = "CS";
      print(data);
      print(data["class"]);
}
```

Output

```
Yash Dart dart program3-2.dart
{college: SK Somaiya College, class: SYBCA, stream: CS}
SYBCA
```

4) Fixed Length List

Code

```
void main() {
      List? data = List.filled(5, null, growable:false);
      data[0] = "SK";
      data[1] = "Somaiya";
      data[2] = "College";
      data[3] = "Vidyavihar";
      print(data);
      print(data[2]);
}
```

Output

```
Yash Dart dart program4.dart
[SK, Somaiya, College, Vidyavihar, null]
College
```

5) Growable List

Code

```
void main() {
     var college = ["SK Somaiya", "College"];
     print(college);
     college.add("CS");
     print(college);
     college.addAll(["Vidyavihar", "East"]);
     print(college);
     college.insert(1, "University");
     print(college);
     college.insertAll(1, ["SY", "BCA"]);
     print(college);
     print(college[1]);
}
```

Output

```
Yash  Dart  dart program5.dart
[SK Somaiya, College]
[SK Somaiya, College, CS]
[SK Somaiya, College, CS, Vidyavihar, East]
[SK Somaiya, University, College, CS, Vidyavihar, East]
[SK Somaiya, SY, BCA, University, College, CS, Vidyavihar, East]
SY
```

6) Sets

Code

```
void main() {
     var college = <String>{"Hello students"};
     print("Value in set is: $college");
     college.add("Welcome to SK Somaiya College");
     print("Value in set is: $college");
     var stream_name = {"CS", "IT", "BMS"};
     college.addAll(stream_name);
     print("Value in set is: $college");
     var college1 = college.elementAt(0);
     print("Element at index 0 is: $college1");
     int l = college.length;
     print("The length is: $l");
     bool check = college.contains("CS");
     print("$check");
     college.remove("Hello students");
     print("$college");
     print("Using forEach");
     college.forEach((element) {
          if(element == "IT") {
               print("Found");
          }
          else {
```

```
                print("Not Found");
            }
        });
        college.clear();
        print("$college");
}
```

Output

```
Yash  Dart  dart program6.dart
Value in set is: {Hello students}
Value in set is: {Hello students, Welcome to SK Somaiya College}
Value in set is: {Hello students, Welcome to SK Somaiya College, CS, IT, BMS}
Element at index 0 is: Hello students
The length is: 5
true
{Welcome to SK Somaiya College, CS, IT, BMS}
Using forEach
Not Found
Not Found
Found
Not Found
{}
```

7) Records

Code

```
void main() {
      var record = ("first", a:2, b:true, "last");
      print(record.$1);
      print(record.a);
      print(record.b);
      print(record.$2);
}
```

Output

```
Yash  Dart  dart program7.dart
first
2
true
last
```

8) Map

Code

```
void main() {
      var college = {"stream":"CS", "degree":"BCA", "college":"SK
Somaiya"};
      print(college);
      print(college["stream"]);
      print(college[0]);
      college["address"] = "Welcome to";
      print(college);
      var college2 = {"location": "Vidyavihar " "East"};
```

```
      print(college2);
      print(college2["location"]);
}
```

Output

```
Yash  Dart  dart program8.dart
{stream: CS, degree: BCA, college: SK Somaiya}
CS
null
{stream: CS, degree: BCA, college: SK Somaiya, address: Welcome to}
{location: Vidyavihar East}
Vidyavihar East
```

9) Class

Code

```
class College {
      var a;
      var b;
      void set(x, y) {
            this.a = x;
            this.b = y;
      }
      void add() {
            var c = this.a + this.b;
            print(c);
      }
}
void main() {
      College c1 = new College();
      College c2 = new College();
      c1.set(1, 2);
      c1.add();
      c2..set(3, 4)..add();
}
```

Output

```
Yash  Dart  dart program9.dart
3
7
```

10) Function (Return)

Code

```
int add(int a, int b) {
      int result = a + b;
      return result;
}
void main() {
      var output = add(10, 20);
```

```
     print("The output of the addition from the function is
$output.");
}
```

Output

```
Yash  Dart  dart program10.dart
The output of the addition from the function is 30.
```

11) Types of Parameters

Code

```
void college1(int p1, [var p2]) {
     print("P1 = $p1");
     print("P2 = $p2");
     print("\n");
}
void college2(int p1, {var p2, var p3}) {
     print("P1 = $p1");
     print("P2 = $p2");
     print("P3 = $p3");
     print("\n");
}
void college3(int p1, {int p2 = 12}) {
     print("P1 = $p1");
     print("P2 = $p2");
}
void main() {
     college1(1);
     college2(1, p3:12);
     college3(1);
}
```

Output

```
Yash  Dart  dart program11.dart
P1 = 1
P2 = null


P1 = 1
P2 = null
P3 = 12


P1 = 1
P2 = 12
```

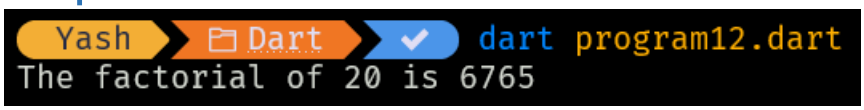
12) Recursive Function

Code

```
int factorial(int n) {
     return n < 2 ? n : (factorial(n - 1) + factorial(n - 2));
```

```
}
void main() {
     int i = 20;
     print("The factorial of $i is ${factorial(i)}");
}
```

Output



13) Lambda Function

Code

```
void college() => print("Hello there!");
void main() {
     college();
}
```

Output

14) If, Else-If, Else

Code

```
void main() {
     int age = 65;
     if (age > 0 && age < 18) {
          print("You are a child.");
     }
     else if (age >= 18 && age < 60) {
          print("You are an adult.");
     }
     else {
          print("You are a senior citizen.");
     }
}
```

Output

15) Switch Case

Code

```
void main() {
     String stream = "CS";
     String clas = "BCA";
     switch(stream) {
          case "CS": {
               switch(clas) {
```

```
                    case "BCA": {
                         print("The stream selected is BCA.");
                    }break;
               }
          }break;
          case "IT": {
               print("You have selected the IT department.");
          }break;
          default: {
               print("Please select a proper stream.");
          }
     }
}
```

Output

```
Yash  Dart  dart program15.dart
The stream selected is BCA.
```

16) For Loop

Code

```
void main() {
     int num = 5, fact = 1;
     for (int i = 2; i <= num; i++) {
          fact = fact * i;
     }
     print("The factorial of the number $num is $fact.");
}
```

Output

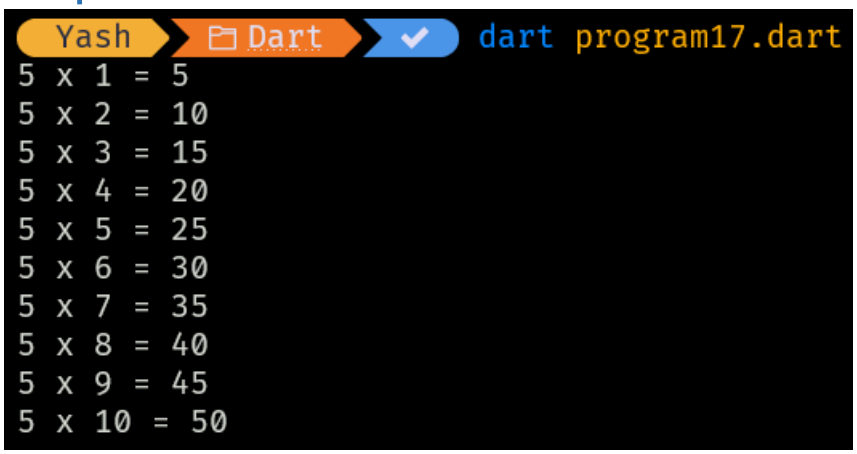
```
Yash  Dart  dart program16.dart
The factorial of the number 5 is 120.
```

17) Table

Code

```
void main() {
     int num = 5, result;
     for (int i = 1; i <= 10; i++) {
          result = num * i;
          print("$num x $i = $result");
     }
}
```

Output



18) For In Loop

Code

```
void main() {
     var data = [1, 2, 3, 4, 5];
     for (int i in data) {
          print(i);
     }
}
```

Output

19) For Each Loop

Code

```
void main() {
     var data = [1, 2, 3, 4, 5];
     data.forEach((var num) => print(num));
}
```

Output

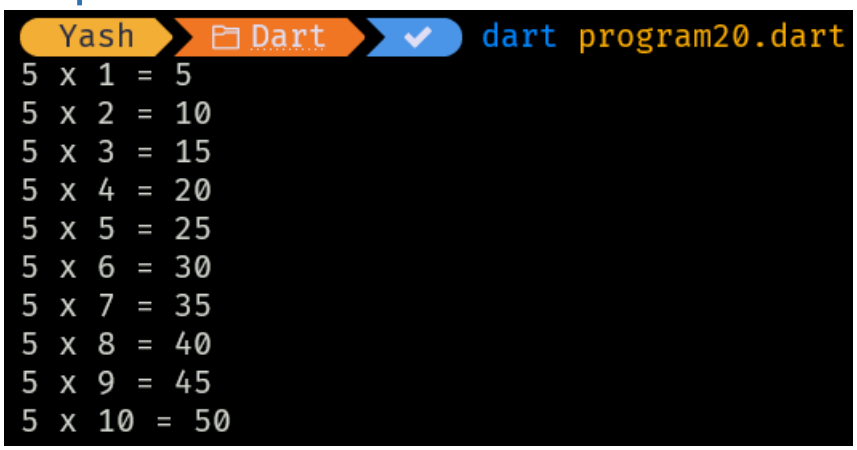
20) While Loop

Code

```
void main() {
```

```
      int num = 5, i = 1, result;
      while (i <= 10) {
            result = num * i;
            print("$num x $i = $result");
            i++;
      }
}
```

Output

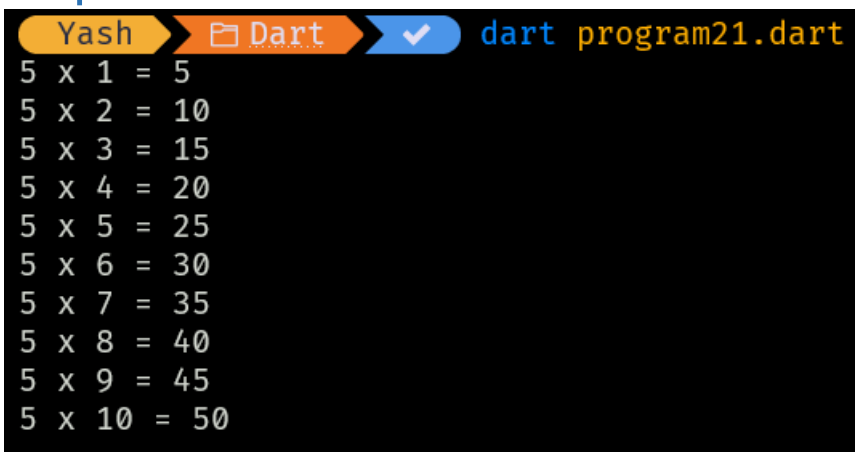


21) Do While Loop

Code

```
void main() {
      int num = 5, i = 1, result;
      do {
            result = num * i;
            print("$num x $i = $result");
            i++;
      }
      while (i <= 10);
}
```

Output



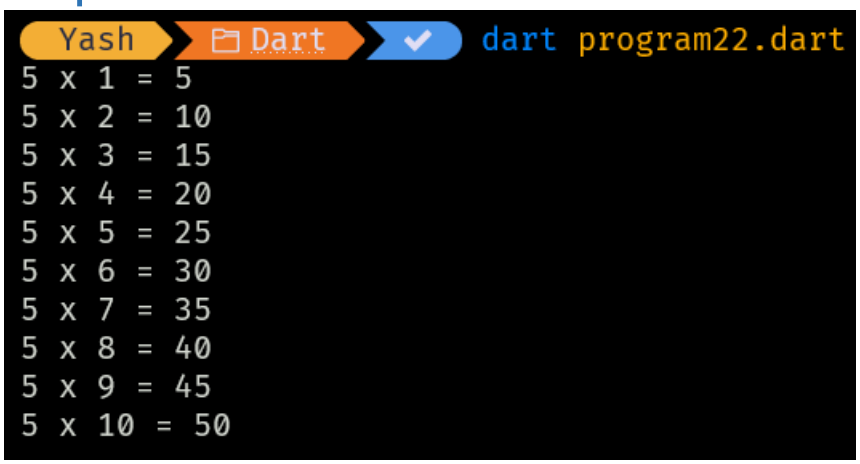
22) Class Again

Code

```
class Table {
```

```
     var i;
     var result;
     void multTable(int num) {
          for (i = 1; i <= 10; i++) {
               result = num * i;
               print("$num x $i = $result");
          }
     }
}
void main() {
     Table tab = new Table();
     tab.multTable(5);
}
```

Output



23) Constructor

Code

```
class Table {
     Table(int num) {
          int i, result;
          for (i = 1; i <= 10; i++) {
               result = num * i;
               print("$num x $i = $result");
          }
     }
}
void main() {
     Table tab = new Table(5);
}
```

Output

```
Yash Dart dart program23.dart
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

24) Getter and Setter

Code

```
class Student {
	String sname = "";
	set setName(String name) {
		sname = name;
	}
	String get getName {
		return sname;
	}
}
void main() {
	Student s = new Student();
	s.setName = "Yash";
	print("The name of the student is ${s.getName}.");
}
```

Output

```
Yash Dart dart program24.dart
The name of the student is Yash.
```

25) Single Inheritance

Code

```
class Student {
	String sname = "";
	String sroll = "";
	void setDetails(String name, String roll) {
		sname = name;
		sroll = roll;
	}
}
class Marks extends Student {
	void displayMarks() {
		int m1 = 75, m2 = 80, m3 = 85;
		print("- STUDENT DETAILS -");
```

```
            print("Name: $sname");
            print("Roll No.: $sroll");
            print("- MARKS -");
            print("English: $m1");
            print("Mathematics: $m2");
            print("Science: $m3");
      }
}
void main() {
      Marks m = new Marks();
      m.setDetails("Yash", "38");
      m.displayMarks();
}
```

Output

```
Yash  Dart  dart program25.dart
- STUDENT DETAILS -
Name: Yash
Roll No.: 38
- MARKS -
English: 75
Mathematics: 80
Science: 85
```

26) Multilevel Inheritance

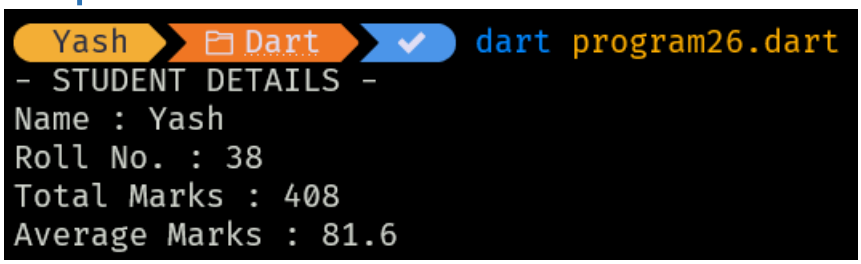
Code

```
class Student {
      String sname = "";
      String sroll = "";
      void setDetails(String name, String roll) {
            sname = name;
            sroll = roll;
      }
}
class Marks extends Student {
      int s1 = 0, s2 = 0, s3 = 0, s4 = 0, s5 = 0;
      void setMarks(int m1, int m2, int m3, int m4, int m5) {
            s1 = m1;
            s2 = m2;
            s3 = m3;
            s4 = m4;
            s5 = m5;
      }
}
class Report extends Marks {
      int total = 0;
      double avg = 0;
      void calculateMarks() {
            total = s1 + s2 + s3 + s4 + s5;
```

```
            avg = total / 5;
        }
        void displayReport() {
            print("- STUDENT DETAILS -");
            print("Name : $sname");
            print("Roll No. : $sroll");
            print("Total Marks : $total");
            print("Average Marks : $avg");
        }

}
void main() {
        Report r = new Report();
        r.setDetails("Yash", "38");
        r.setMarks(78, 80, 85, 75, 90);
        r.calculateMarks();
        r.displayReport();
}
```

Output

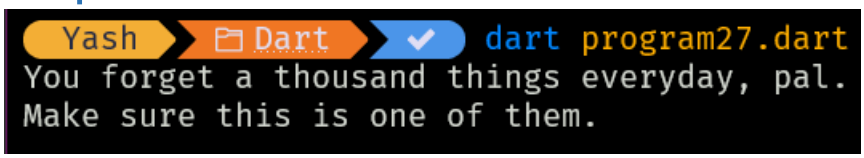


27) Method Overriding

Code

```
class Class1 {
        void method() {
            print("You forget a thousand things everyday, pal.");
        }
}
class Class2 extends Class1 {
        void method() {
            print("Make sure this is one of them.");
        }
}
void main() {
        Class1 c1 = new Class1();
        Class2 c2 = new Class2();
        c1.method();
        c2.method();
}
```

Output

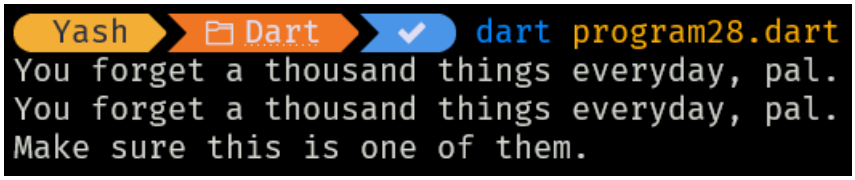


28) Constructors w/ Inheritance

Code

```
class Class1 {
	Class1() {
		print("You forget a thousand things everyday, pal.");
	}
}
class Class2 extends Class1 {
	Class2() {
		print("Make sure this is one of them.");
	}
}
void main() {
	Class1 c1 = new Class1();
	Class2 c2 = new Class2();
}
```

Output



29) Parameterized Constructors w/ Inheritance

Code

```
class Class1 {
	Class1(String name, String score) {
		print("My name is $name, and I pulled off a heist worth
$score.");
		print("You forget a thousand things everyday, pal.");
	}
}
class Class2 extends Class1 {
	Class2(String name, String score):super(name, score) {
		print("Make sure this is one of them.");
	}
}
void main() {
	Class2 c2 = new Class2("Michael", "\$10,000");
}
```

Output

```
Yash Dart dart program29.dart
My name is Michael, and I pulled off a heist worth $10,000.
You forget a thousand things everyday, pal.
Make sure this is one of them.
```

30) Individual Parameterized Constructors w/ Inheritance

Code

```
class Class1 {
     Class1(int num1) {
          print("Class 1 variable = $num1");
     }
}
class Class2 extends Class1 {
     Class2(int num1, int num2):super(num1) {
          print("Class 2 variable = $num2");
     }
}
class Class3 extends Class2 {
     Class3(int num1, int num2, int num3):super(num1, num2) {
          print("Class 3 variable = $num3");
     }
}
void main() {
     Class3 c3 = new Class3(10, 20, 30);
}
```

Output

```
Yash Dart dart program30.dart
Class 1 variable = 10
Class 2 variable = 20
Class 3 variable = 30
```

31) Passing Parameterized Constructors w/ Inheritance

Code

```
class Student {
     String sname = "";
     String sroll = "";
     Student(this.sname, this.sroll);
}
class Marks extends Student {
     int s1 = 0, s2 = 0, s3 = 0, s4 = 0, s5 = 0;
     Marks(String sname, String sroll, this.s1, this.s2, this.s3,
this.s4, this.s5):super(sname, sroll);
}
class Report extends Marks {
     int total = 0;
     double avg = 0;
```

```
     Report(String sname, String sroll, int s1, int s2, int s3, int
s4, int s5):super(sname, sroll, s1, s2, s3, s4, s5);
     void calculateMarks() {
          total = s1 + s2 + s3 + s4 + s5;
          avg = total / 5;
     }
     void displayReport() {
          print("- STUDENT DETAILS -");
          print("Name : $sname");
          print("Roll No. : $sroll");
          print("Total Marks : $total");
          print("Average Marks : $avg");
     }

}
void main() {
     Report r = new Report("Yash", "38", 78, 80, 85, 76, 89);
     r.calculateMarks();
     r.displayReport();
}
```

Output