CET4104 – MOBILE PROGRAMMING

Week 4 – 29.03.2023

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AGENDA

- LIST
- LOOPS
- Listview
- Map
- Functions

- Mit app inventor, a simple game

LISTS

```
void main() {
  //lists
  //arrays
  //resizable arrays are called growable lists
  var arr=['a','b','c','d','e'];
  print(arr);
  //lists starts with zero index
  print(arr[1]); //b
  var arr2=[];
  arr2.add(123);
  arr2.add(1);
  arr2.add(5);
  arr2.add(23);
  arr2.add(45);
  print(arr2);
  //error: print(arr2[5]);

  // setAll is multiple form of "change values"
  // listname.setAll(starting index,[values]);
  arr.setAll(1,["1","2","3"]);
  print(arr);

  // .addAll([values]); multiple form of .add();
  // adds the vlaues to the end of list
  arr2.addAll([7,8,9]);
  print(arr2);

  //returns the indexof a values in list
  print(arr2.indexOf(45));
  print(arr2.indexOf(1000));
  // returns -1 which means this value is not in the list


 // .addAll([values]); multiple form of .add();
  // adds the vlaues to the end of list
  arr2.addAll([7,8,9]);
  print(arr2);

  //returns the indexof a values in list
  print(arr2.indexOf(45));
  print(arr2.indexOf(1000));
  // returns -1 which means this value is not in the list

 arr2.remove(23);
  print(arr2);
  //after removing the next values are shifted to left
  arr2.insert(2,99);
  print(arr2);
  //after inserting the values next to nev value shifted to the right

  arr2.removeLast();
  print(arr2);

  //replacing the elements indexed as 2nd,3rd adn 4th with the values 0 and 100
  arr2.replaceRange(2,5,[0,100]);
  print(arr2);

  var arr3=["mustafa","murat","murtaza","nar","abcdefghi"];

  arr2.sort();
  print(arr2);
  arr3.sort();
  print(arr3);

  arr2.sort((a,b)=>a.compareTo(b)); //asc
  print(arr2);

  arr2.sort((a,b)=>b.compareTo(a)); //desc
  print(arr2);

  //sorting in terms of length
  arr3.sort((a,b)=>a.length.compareTo(b.length));
  print(arr3);

  print(arr2);
  arr2.shuffle(); //in every execution has different order
  print(arr2);

  //find the element that contains letter "t"
  print(arr3);
  print(arr3.where(
    (s)=>s.contains("t")
  ));

  print(arr);
  print(arr.reversed); //we didnt changed the array order we are just showing it
  print(arr);
}
```

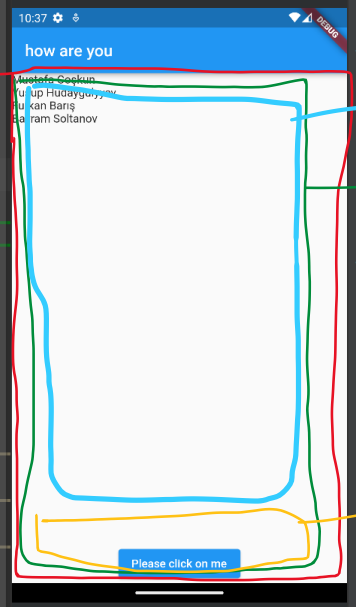
LOOPS

```
void main() {
  //loops
  int i; //is independent from for loop
  for(i=1; i<=5; i++){
    print(i);
  }
  print("i outside of the loop is :" + i.toString());
  print("----------");
  for(int j=1; j<=5; j++){
    print(j);
  }
  // undefined variable --> print(j);
  // because I did not declared it independent from for loop
  print("----------");
  var numbers=[12,23,34,45,22,1,345];
  print(numbers.length);
  for(i=0; i<numbers.length; i++)
    print(numbers[i]);
    print("merhaba"); //this is not inside of the loop
  //if you have only one command inside of loop
  //you dont have to use {}
  //if you dont use {} your loop ends with the first ;
```

```
//iterators: are a type loops
 //but they cannot change the values of the list
 //forEach is the other name of it
 for(int n in numbers){
   print(n);
 }
 print("---------");
 print(numbers);

 for(var number in numbers){
   number=3;
 }
 print(numbers);

 //prefix and postfix
 int a=5, b=5,c,d;
 a++;
 ++b;
 print("a:"+a.toString() + " b:"+b.toString());

 c = a++;
 d = ++b;

 print("a:"+a.toString() + " b:"+b.toString());
 print("c:"+c.toString() + " d:"+d.toString());
```

```
 //while
 int ind=0;
 while(ind++<=5){
   print(ind);
   //ind++;
 }

 int k=10;
 while(k>6){
   print(k);
   k--;
 }

 //do...while
 int m=1000;

 while(m<5){ //if it is correct go to line 70
   print("bye");
 }

 do{
   print("hello");
 }while(m<5); //if it is correct go to line 73

 //f-=5 means f=f-5;
 // i=i*5; -> i*=5;
 // a=a%4; -> a%=4;

 int f=100;
 do{
   print(f-=5); //find this equation f-=5; then use f
 }while(f>0);


 int e=100;
 do{
   e=e-5;
   print(e);
 }while(e>0);
}
```

```dart
class MyApp extends StatelessWidget{
  int year=1981;
  String myTitle="how are you";
  String myText="here is my body text";
  var students = ["Mustafa Coşkun","Yusup Hudaygulyyev","Furkan Barış", "Bayram Soltanov"];
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text(myTitle),
      ),  // AppBar
      body: Column(
        children: [
          Expanded(
            child:
              ListView.builder(
                  itemCount: students.length,
                  itemBuilder: (BuildContext context, int index){
                    return Text(students[index]);
                  }
              )  // ListView.builder
          ),  // Expanded
          Center(
            child: ElevatedButton(
                onPressed: (){
                  String message="";
                  if(year<1990)
                    message="you are soo old";
                  else
                    message="my young friend";
                  var alert=AlertDialog(
                      title: Text("Result"),
                      content: Text(message)
                  );  // AlertDialog
                  showDialog(context: context, builder: (BuildContext)=>alert);
                },
                child: Text("Please click on me")
            )  // ElevatedButton
          ),  // Center
        ],
      ),  // Column
    );  // Scaffold
    throw UnimplementedError();
  }
```



body

Expanded

Column

center

FUNCTIONS

```
//functions, methods
//do not repeat yourself
void main() {
  sayHello();
  sayHello();
  sayHello();
  sayHello();
  sayHelloName("mustafa");
  sayHelloName("yusup");
  double d=average(8,9,10);
  print(d);
  print(average(23,45,32).round());
  test1(1,2,3);
  // error -> test1(1,2);
  test2(1,2);
  test3(n3:345,n2:89,n1:85);
  test3(n2:0);
}
void test3({int? n1, int? n2, int? n3}){
  print(n1);
  print(n2);
  print(n3);
}
void test2(int n1, [int? n2, int? n3]){
  //I have to send n1 but I may not send n2 and n3
  //if I dont send assign them to null
  //in order to be assigned as null I put ? to int
  print(n1);
  print(n2);
  print(n3);
}
```

```
void test1(int n1, int n2, int n3){
  print(n1);
  print(n2);
  print(n3);
}
void sayHello(){
  print("Hello");
}
void sayHelloName(String name){
  print("Hello " + name);
}

double average(int n1, int n2, int n3){
  double avg;
  avg=(n1+n2+n3)/3;
  return avg;
}


/*
types of functions:
void -> not returning a value


typeOfFunction nameOfFunction(argsOfFunction){
  command1;
  command2;
  ....
  .....
  return returningValue;
}
*/
```

```dart
import 'package:flutter/cupertino.dart'; //for IOS Design
import 'package:flutter/material.dart'; // for Android Design

void main(){

  //intellisense
  runApp(MaterialApp(
    home: MyApp()
  ));
}

class MyApp extends StatelessWidget{
  int year=1981;
  String myTitle="how are you";
  String myText="here is my body text";
  var students = ["Mustafa Coşkun","Yusup Hudaygulyyev","Furkan Barış", "Bayram Soltanov"];
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.brown,
      appBar: AppBar(
        title: Text(myTitle),
      ),
      body: Column(
        children: [
          Expanded(
            child:
              ListView.builder(
                itemCount: students.length,
                itemBuilder: (BuildContext context, int index){
                  return Text(students[index]);
                }
              )
          ),
          Center(
            child: ElevatedButton(
              onPressed: (){
                showMessage(context, calculateOldness());
              },
              child: Text("Please click on me")
            )
          ),
        ],
      ),
    );
    throw UnimplementedError();
  }

  //we are adding a new function here
  String calculateOldness(){
    String message="";
    if(year<1990)
      message="you are soo old";
    else
      message="my young friend";

    return message;
  }
    void showMessage(BuildContext context, String message){ // since the conetxt is not a variable I am going to build that context inside of argument parathesis
      var alert=AlertDialog(
        title: Text("Result"),
        content: Text(message)
      );
      showDialog(context: context, builder: (BuildContext)=>alert);
    }

}
```