CSE 102T QUIZ 2

1

An Exception must be caught inside the same method in which it was thrown. (5 Puan)

- (●) True
- ( ) False

2

Which of the following is correct? (5 Puan)

- ( ) An object is like the blueprint; we can have many instances of it which are called classes
- ( ) There is no difference between a class and an object
- ( ) A class is like the blueprint; we can have many instances of it called which are called objects
- (●) The object keyword indicates we're defining an object and the class keyword indicates we're defining a class

3

Analyze the shown code (5 Puan)

```
// Example 1
String s1 = "MyStr";
String s2 = "MyStr";
String s3 = new String("MyStr");
```

```
// Example 2
String s1 = "MyStr";
String s2 = s1;
String s3 = new String("MyStr");
```

- [ ] Both examples create 2 objects with s1 and s2 assigned to one of them, and s3 to the other.
- [ ] Both examples create a single object and assign it to 3 different variables.
- [ ] Example 1 creates 2 String objects with the same value, but Example 2 creates 3 objects.
- [ ] Both examples create 3 different objects.
- [ ] Example 1 creates 3 String objects with the same value, but Example 2 creates only 2 objects.

4

Analyze the shown code (5 Puan)

```
public class Test {
  public static void main(String[] args)
    A a = new A();
    a.print();
  }
}

class A {
  String s;

  A(String newS) {
    s = newS;
  }

  void print() {
    System.out.println(s);
  }
}
```

- [ ] The program would compile and run if you change A a = new A() to A a = new A("5").
- [ ] The program compiles and runs fine and prints nothing.
- [ ] The program has a compilation error because class A does not have a no-arg constructor.
- [ ] The program has a compilation error because class A is not a public class.

5

What is the output of the given code? (20 Puan)

```
public static void main(String[] args){
  try{
    int[] arr = {1, 2, 3, 4, 5};
    displayValue(arr, arr.length / 2);
    displayValue(arr, arr.length);
    displayValue(arr, 0);
  } catch (Exception ex){
    System.out.println("Error: In main method.");
  }
}

public static void displayValue(int[] arr, int i) throws IndexOutOfBoundsException {
  try {
    if(i >= arr.length || i < 0)
      throw new IndexOutOfBoundsException();
    System.out.println(arr[i]);
  } catch (IndexOutOfBoundsException ex){
    System.out.println("Error: index invalid");
    throw ex;
  } finally {
    System.out.println("finally");
  }
}
```

6

Give a line of code that would result in an Exception. This line may NOT use the java keyword that creates a new Exception. (5 Puan)

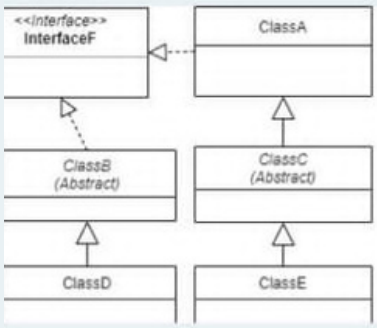
7

Give a line of code that would result in an Exception. This line must use the java keyword that creates a new Exception. (5 Puan)

TEMİNATÖR:TALAT
EDİTÖR:EFE

CSE 102T QUIZ 3

For each of the below questions answer for each reference variable which of the responses is true. All correct responses must be selected.




```
ClassA varA = new ClassE();
ClassB varB = new ClassB();
ClassC varC = new ClassA();
ClassD varD = new ClassA();
ClassE varE = new InterfaceF();
InterfaceF varF = new ClassE();
ClassA[] arrA = new ClassA[5];
ClassA[] arrB = new ClassB[5];
ClassA[] arrC = new ClassC[5];
InterfaceF[] arrF = new ClassA[5];
```

2 varA (3 Puan)

3 varB (3 Puan)

4 varC (3 Puan)

5 varD (3 Puan)

6 varE (3 Puan)

7 varF (3 Puan)

8 arrA[0] = new _____(); will **not** result in an error (compiler nor runtime). Select all that apply. (3 Puan)

9 arrB[0] = new _____(); will **not** result in an error (compiler nor runtime). Select all that apply. (3 Puan)

10 arrC[0] = new _____(); will **not** result in an error (compiler nor runtime). Select all that apply. (3 Puan)

11 arrF[0] = new _____(); will **not** result in an error (compiler nor runtime). Select all that apply. (3 Puan)

- [ ] instanceof ClassA
- [ ] instanceof ClassB
- [ ] instanceof ClassC
- [ ] instanceof ClassD
- [ ] instanceof ClassE
- [ ] instanceof InterfaceF
- [ ] None of these
- [ ] The line that declared this variable results in a compiler error

12 For any variable or array declarations above that you answered there would be a compiler error, state the variable or array name and the reason for the compiler error. (20 Puan)

Yanıtınızı girin

TEMİNATÖR:TALAT
EDİTÖR:EFE

CSE 102T FINAL

3

What is the term to describe the following?
Two methods with the same name and return type but different parameter lists.
Can be in the same class.

- (●) Overload
- ( ) Overrride
- ( ) Abstract Class
- ( ) Non-Abstract Class
- ( ) Interface
- ( ) None of the above

4

What is the term to describe the following?
Can create an Object from this class.
Cannot contain abstract methods.

- ( ) Overload
- ( ) Overrride
- ( ) Abstract Class
- (●) Non-Abstract Class
- ( ) Interface
- ( ) None of the above

5

What is the term to describe the following?
Cannot create an Object from this class.
Can contain abstract methods that will be defined in subclasses.

- ( ) Overload
- ( ) Overrride
- (●) Abstract Class
- ( ) Non-Abstract Class
- ( ) Interface
- ( ) None of the above

6

What is the term to describe the following?
Two methods with the same name, return type, and parameter list. One exists in a parent class but the other modifies the implementation.

- ( ) Overload
- (●) Overrride
- ( ) Abstract Class
- ( ) Non-Abstract Class
- ( ) Interface
- ( ) None of the above

7

What is the term to describe the following?
Similar to a class. Contains only constants and abstract methods.

- ( ) Overload
- ( ) Overrride
- ( ) Abstract Class
- ( ) Non-Abstract Class
- (●) Interface
- ( ) None of the above

8

The Object class contains a method called toString() that returns a String representation of the Object. Therefore, if we can call the toString() method on any object. It is the method called if the object is sent as a parameter to the println() method.

- (●) True
- ( ) False

9

Given two reference variables t1 and t2, if t1.equals(t2) is true, t1==t2 must also be true.

- ( ) True
- (●) False

10

Using linear search, we can search an unsorted list.

- (●) True
- ( ) False

11

ArrayList<int> list = new ArrayList<int>(); will have a compile error.

- (●) True
- ( ) False

12

A constructor is not required to create an object of a class.

- ( ) True
- (●) False

TEMİNATÖR:TALAT
EDİTÖR:EFE

CSE 102T FINAL

13

An immutable class is one where the contents cannot be changed after the object is created. Which of the classes shown are immutable? Explain how you know.

```
class ClassA {
   int a;
   int[] aArr;

   public ClassA(int a) {
      this.a = a;
      aArr = new int[a];
      for(int i = 0; i < a; i++)
         aArr[i] = i;
   }

   public int getA() {
      return a;
   }

   public int[] getArr() {
      return aArr;
   }

   public String toString() {
      String retVal = "";
      for(int i = 0; i < a; i++) {
         retVal += aArr[i] + " ";
      }
      return retVal;
   }
}
```

```
class ClassB {
   int b;
   int[] bArr;

   public ClassB(int b) {
      this.b = b;
      bArr = new int[b];
      for(int i = 0; i < b; i++)
         bArr[i] = i;
   }

   public void setB(int b) {
      this.b = b;
   }

   public void setArr(int val, int i){
      bArr[i] = val;
   }

   public String toString() {
      String retVal = "";
      for(int i = 0; i < b; i++) {
         retVal += bArr[i] + " ";
      }
      return retVal;
   }
}
```

```
class ClassC {
   int c;
   int[] cArr;

   public ClassC(int c) {
      this.c = c;
      cArr = new int[c];
      for(int i = 0; i < c; i++)
         cArr[i] = i;
   }

   public int getC() {
      return c;
   }

   public int getArr(int i) {
      return cArr[i];
   }

   public String toString() {
      String retVal = "";
      for(int i = 0; i < c; i++) {
         retVal += cArr[i] + " ";
      }
      return retVal;
   }
}
```

```
class ClassD {
   int d;
   int[] dArr;

   public void setD(int d) {
      this.d = d;
      dArr = new int[d];
      for(int i = 0; i < d; i++)
         dArr[i] = i;
   }

   public String toString() {
      String retVal = "";
      for(int i = 0; i < d; i++) {
         retVal += dArr[i] + " ";
      }
      return retVal;
   }
}
```

Doğru yanıtlar: Only ClassC because ClassA allows us to have access to change values in the array, None are immutable because the variables are not private

14

Which of the classes above has a potential run-time error? Explain what error might be encountered.

Doğru yanıtlar: ClassB because we can set b to be larger than the array length

15

Given below are two (2) system definitions that use a group of Objects. For each, indicate the most ideal type of core data structure we should use to implement the group (such as Array, Set, List, etc.). Give a one to two sentence justification for your choice.

A collection of transactions for a bank account:
* Order matters
* It should have transactions sorted by date
* The collection will have no limit to how many it can hold
* We would like to be able to quickly find a transaction from a certain date

Doğru yanıtlar: Array, ArrayList

16

A collection of customers for a bank:
* Order does not matter
* There will be no duplicates since customers will represent people
* The collection will have no limit to how many it can hold **Doğru yanıtlar:** Set

17

Explain how mutual exclusion, hold and wait, no preemption, and circular wait combine to result in a program entering a deadlocked state. **Doğru yanıtlar:** Not part of CSE 102

18

What does OOP stand for? How is it different from other forms of software development?

Doğru yanıtlar: Object Oriented Programming - it defines structures as objects and is not just sequential

19

We want to keep track of birthmonths for a group of people. We will use a map as follows:
Main map has Integer Key for year and Value is a second Map. The second map has String as Key for the month name and an ArrayList<String> as Value for a list of the people who are born in that Year and Month

In the box provided, write a method called addBirthMonthYear() that takes the following four (4) parameters:
* a map as defined above
* a person's name
* a year of their birth
* and the month of their birth

It will add the person to the map according to the map specifications and return nothing. Example shown:

```
Map<Integer, Map<String, ArrayList<String>>> bdMap = new HashMap<>();
addBirthMonthYear(bdMap, "Ann", 1979, "January");
addBirthMonthYear(bdMap, "Joseph", 1979, "June");
addBirthMonthYear(bdMap, "Elijah", 2009, "July");
addBirthMonthYear(bdMap, "Grace", 2012, "July");
addBirthMonthYear(bdMap, "Joshua", 2012, "July");
System.out.println(bdMap);
```

```
{2009={July=[Elijah]}, 1979={June=[Joseph], January=[Ann]}, 2012={July=[Grace, Joshua]}}
```

TEMİNATÖR:TALAT
EDİTÖR:EFE

CSE 102T FINAL

20

We want to simulate a Set using an array. In the shown example, we begin with an empty array, then add items to it. For this question, write the addItem(int[], int):int[] method. It adds the item to the array if the item does not exist already and returns a new array with the item added. If the item already exists, it returns the original array. NOTE: This method returns an array.
(-/6 Puan)

```
public static void main(String[] args) {
   int[] set = new int[0];
   set = addItem(set, 1);
   set = addItem(set, 2);
   set = addItem(set, 3);
   set = addItem(set, 4);
   System.out.println(countItems(set));
   System.out.println(listItems(set));
   set = addItem(set, 5);
   set = addItem(set, 3);
   set = addItem(set, 1);
   System.out.println(countItems(set));
   System.out.println(listItems(set));
}
```

```
4
1 2 3 4
5
1 2 3 4 5
```

21

Write the following methods for the set using an array:
countItems(int[]):int returns the number of items in the set
listItems(int[]):String returns each item in the set separated by a space (sorting is not required).

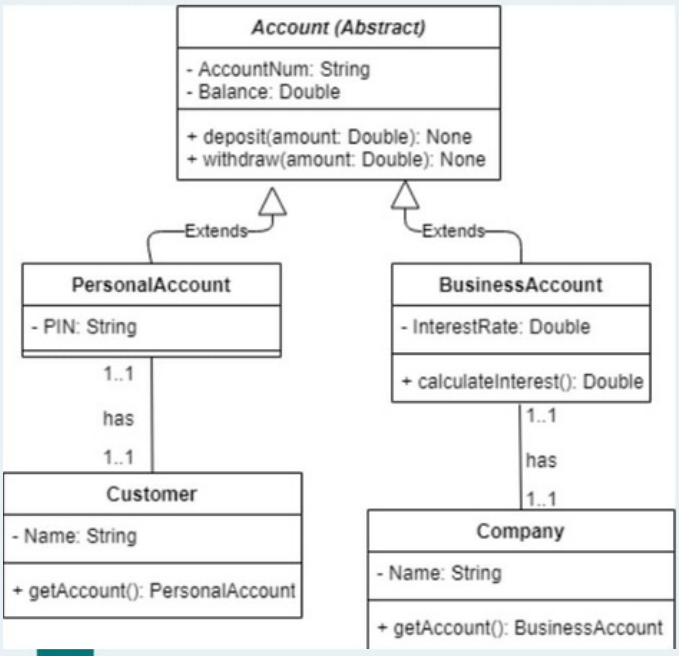
22

Explain why the addItems() method must return an array and cannot just add items to the array itself.

Doğru yanıtlar: Because we cannot change the size of the array with the reference variable

Analyze a Solution

For the shown UML diagram, perform the following tasks.



23

Write a possible description of the classes, attributes, and methods in the style of the assignment descriptions from this semester.

24

Write the description for an additional method that would be useful for this system and write the method. NOTE: This method must be more complex than a simple get or set method (must include a conditional or loop).

25

What is an example of an exception that might be useful for this system? Give the name of the Exception you would write and what condition (method and value) that would cause the exception.

TEMİNATÖR:TALAT
EDİTÖR:EFE