# Scope: Some midterm questions + following questions

## 1. Discuss about inheritance in terms of the 'is-a' relationship with an example.

ex) Person - Student - Graduate

Student is a superclass of Graduate

## 2. Discuss about the 'Object' class.

Superclass of all Classes.

## 3. Provide an example scenario where we need interfaces in a real world software project.

Hyundai Mobis -> for a car, if the company implements an interface, other ]

companies could easily follow the interface(making a program consistent)

## 4. What is polymorphism and give an example.

public class JC extends Person implements Student, Husband, Faculty {....}

Student myInstance = new JC();

Husband myHusband = new JC();

…

Person person = new JC();

= one instance could have different forms.(provides flexibility)

## 5. Discuss about the reserved word, instanceof. (What is it for and/or When do we need this?)

## 1)In polymorphism, Classes have a variety of method pool. In order to avoid trying to use a method that is not in that specific class, you need to specify the Class by instanceof.

2)In case of comparing Classes

## 6. Discuss about dynamic binding (late binding)

Type of instance is decided in runtime(= late binding) (check slide 15~18)

+) Before executing a program, we cannot decide which method will execute. After running the program, the method will be binding to each instance.

## 7. What is an exception, throwing an exception, and handling an exception?

(From slide 18)

Exception is an object which contains an error data and related actions.

Throwing an exception means creating an exception object.

Handling an exception means detecting and dealing with the exception.

## 8. List at least three predefined exception classes and briefly explain them.

1) I/O Exceptions : fails to open a file or so

2) IndexOutOfBound : accessing an index that doesn’t exist

3) NullPointerExceptions: when referring to the members of a null object.

## 9. Discuss how a text file and a binary file are different with an example.

Check slide.

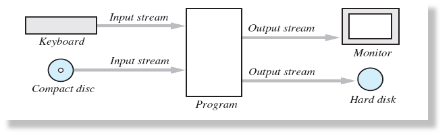
(From silde 20-21)

Text file is a file which treated as a sequence of characters.

All other files are binary files.

10. What is a stream and explain streams with a figure we learned in the class.

Stream = path for data



## 11. Write single line comments the following source code. (Reading/writing a file/an object/an array will be given.)

## 12. Write a statement that defines a Hashmap instance named '*myMap*' and its key is a *String* type and its value type is an *ArrayList* that can have an *Integer* instance as an element. (Underlined ones can be changed in the real exam question.)

HashMap<String,ArrayList<Integer>> myMap = new HashMap<String,ArrayList<Integer>>();

## 13. Write single line comments about the following source code. (Concurrency related code will be given)

## 14. Design class diagrams for the given problem.