

KABARAK



UNIVERSITY

UNIVERSITY EXAMINATIONS

2009/2010 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE

COURSE CODE: COMP 320

**COURSE TITLE: OBJECT ORIENTED ANALYSIS AND
DESIGN**

STREAM: Y3S2

DAY: TUESDAY

TIME: 2.00 – 4.00 P.M.

DATE: 10/08/2010

INSTRUCTIONS:

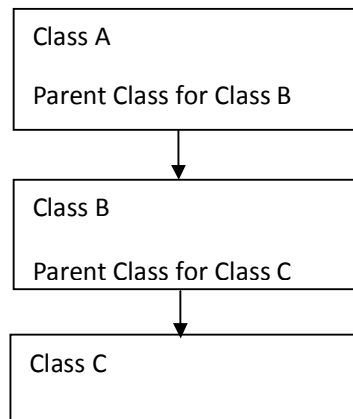
- Answer question **ONE** (compulsory) and Any other **TWO** questions

PLEASE TURNOVER

QUESTION ONE: (30mks)

- a) List four object oriented programming languages (2mks)
- b) Explain the following terms as they are used in object oriented analysis and design
- i. OOA (Object Oriented Analysis) (2mks)
 - ii. OOD(Object oriented Design) (2mks)
 - iii. OOP (Object Oriented Programming) (2mks)
- c) Using appropriate diagrams, explain the two term below which are used in kinds of relationships
- i. Links (2mks)
 - ii. Aggregation (2mks)
- d) Write a JAVA program that is going to print a triangular multiplication table as shown below
- ```
0
0 2
0 3 6
0 4 8 12
0 5 10 15 20
0 6 12 18 24 30
0 7 14 21 28 35 42
```
- (6mks)

- e) The diagram below illustrates a type of inheritance



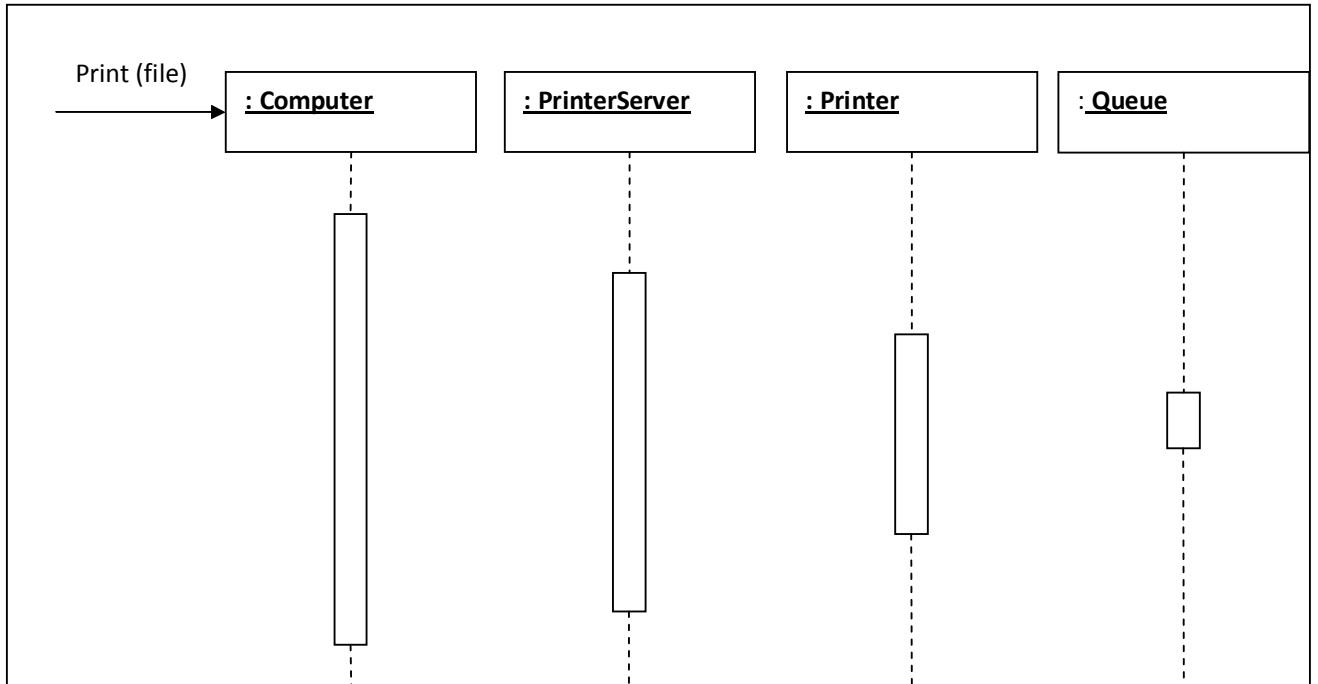
- i. Explain the type of inheritance display by the diagram (2mks)
  - ii. Inheritance enables you to extend the functionality of an existing class. Explain the characteristics of a sub class. (4mks)
- f) In object oriented methodology. Software lifecycle is very important. Explain the fountain flow model, an illustrating diagram is important. (6mks)

**QUESTION TWO: (20mks)**

- a. Explain what software reusability is, as its being used in object oriented analysis and design (2mks)
- b. What are some of the ways that an object can have visibility to another object? (4mks)
- c. The Software Development Life Cycle of any software intensively includes four major phases named below.  
    Inception  
    Elaboration  
    Construction  
    Transition  
    Explain what happens at each of these phases of software development. (4mks)
- d. A survey of over 80 different object-based and object-oriented programming languages have brought suggestions that object oriented programming languages may be grouped into 7 categories. Discuss any three of these categories (6mks)
- e. Write a JAVA program that is going to calculate the area of a circle (4mks)

**QUESTION THREE: (20mks)**

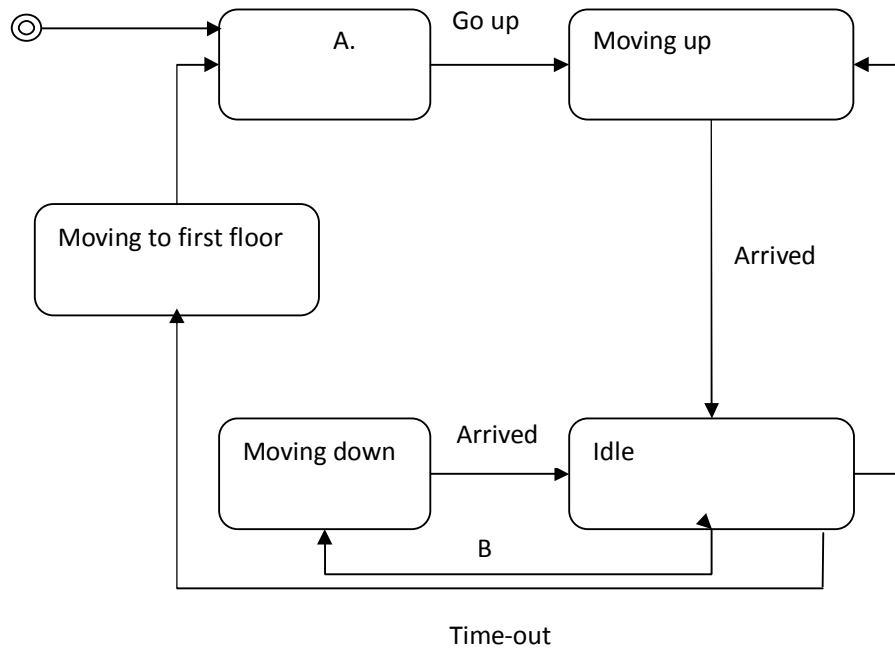
- a. Using the concept of classes in JAVA programming language, write a program that will convert 69F (Fahrenheit) into equivalent centigrade temperature type. (6mks)
- b. There are a number of proven approaches for analysis that are relevant to object-oriented systems. Briefly explain the two approaches listed below.
  - i. Informal English Description
  - ii. Behavior analysis (4mks)
- c. What are some of the forms of code reusability (2mks)
- d. Explain the concept of UML (2mks)
- e. The diagram represents a sequence diagram from the operations of a printer.
  - i. Using links, show the various sequences that take place from the time the printer gets the message to print until it prints the information. (5mks)
  - ii. What is the advantage of using sequence diagrams in modeling applications (1mks)



**QUESTION FOUR: (20mks)**

- a. Briefly discuss the various concepts of Object Oriented Programming (4mks)
- b. Discuss Some of the advantages of object oriented programming listed below
  - Real-world programming
  - Modularity of code
  - Information hiding (6mks)
- c. Association between classes and objects is important in object oriented analysis and design
  - i. Explain what Cardinality means (1mks)
  - ii. What are the types of cardinality that exists (2mks)

d. Below is a diagram of a state diagram of an elevator



- i. What is a state diagram? (1mk)
- ii. What are some of the uses of State diagrams? (2mks)
- iii. In the figure above, elaborate on the state that is likely to be at A (2mks)
- iv. Explain the event that will most likely event to take place at B (1mks)
- v. What is the advantage of using state diagrams in design? (1mks)