# NASARAWA STATE UNIVERSITY, KEFFI
## FACULTY OF NATURAL & APPLIED SCIENCES
## DEPARTMENT OF COMPUTER SCIENCE

FIRST SEMESTER EXAMINATION 2019/2020 SESSION
COURSE TITLE: DATABASE DESIGN & MANAGEMENT
COURSE CODE: CMP 319 — CMP 317

Total = 70 Marks
Time Allowed: 2 Hours

Instructions:

- Read the questions carefully
- ANSWER question **ONE** and any **other Three** questions of your choice
- Question 1 is for 25 marks while the other questions are for 15 marks each.

1. a. The database architecture describes the location of all the pieces of information that make up the database application. Discuss the 3 broad classifications of database architecture.
   b. Define Data Warehouse.
   c. With the aid of ER diagrams, explain the terms Generalisation, Specialization and Inheritance

2. a. What is SQL?
   b. Explain Data definition and Data manipulation languages. List the sets of commands involved respectively.
   c. Define (i) Primary Key (ii) Foreign key

3. a. Describe a Database management system.
   b. State the objectives of a Database management system
   c. List the 3 level approach to database design

4. a. Database management system is classified into two main broad classes, Discuss
   b. Who is a Database designer?
   c. Describe 2 types of Database designers?

5. a. Define (i) Entity (ii) Attributes (iii) Relationship, with respect to Entity relationship model
   b. List 5 types of Attributes
   c. State 3 reasons why Normalization is needed

6. a. What do you understand by "Data Mining"?
   b. Describe a Decision Support system.
   c. Briefly explain the four main components of Decision support system

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**FIRST SEMESTER EXAMINATION 2020/2021 SESSION**
**COURSE TITLE:** Object-Oriented Programming
**COURSE CODE:** CMP 311

**Instructions:** Answer **Question One (1)** and Any Other **Three** Questions — **Total = 70 Marks**
Read through all the questions first before attempting, so as to select best question options.
Make your answers concise and clear as well as your diagrams must be readable. — **Time Allowed: 2 Hours**
**Cross out any unused/blank space in the answer booklet**

### QUESTION 1

a). List and explain the Six basic Concepts of Object Oriented Programming. (10 Marks)
b). Write a Syntax of Single Level Inheritance (5 Marks)
c). Briefly explain the difference between a Single Precision and Double Precision. (5 Marks)
d). Discuss briefly on the Cohesion (Coherence). (5 Marks)

### QUESTION 2

(a). Write in details the data types. (5 Marks) (b). Draw and explain the diagram of Multiple Inheritance. (5 Marks)

(c). What is Compile time Polymorphism? (2.5 Marks) (d). What is Run time Polymorphism? (2.5 Marks)

### QUESTION 3

Briefly explain the Following:

(i). Aggregation vs Composition. (5 Marks) (ii) Generalization vs Specialization. (5 Marks)

(iii) Access modifiers. (2.5 Marks) (iV) Association. (2.5 Marks)

### QUESTION 4

(a). Write a program to demonstrate operator overloading in java (10 Marks)

Where: Int a = 7, b = 8;

(b). Write short notes on the following:

(i) Method Overloading (2.5 Marks) (ii) Constructor Overloading (2.5 Marks)

### QUESTION 5

(a). Explain the three types of coupling exist in object oriented design. (7 Marks)

(b). briefly explain the two types of constructors we have. (4 Marks)

(c). Discuss briefly on the Liscov's Substitution Principle. (4 Marks)

### QUESTION 6

(a). Draw and Explain the Model of Hierarchical Inheritance. (5 Marks)
(b). There are Four Access Modifiers Keywords in Java.
Name them and their Descriptions: (5 Marks)
(c). Plus (+) is the only Operator we have in Java and It is used for two purposes. (5 Marks)

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**FIRST SEMESTER EXAMINATION 2020/2021 SESSION**
**COURSE TITLE : DATA MANAGEMENT**
**COURSE CODE : CMP 317 - 2 CREDIT UNITS**

**Instructions:** Answer Question **ONE (1)** & Any other **THREE (3)** Questions

**QUESTION ONE**

i. Discus the term database **(2 Marks)**
ii. List and explain the types of data base we have. **(4 Marks)**
iii. Explain DBMS with the Aid of a Diagram **(10 Marks)**
iv. Give two Advantages and Disadvantages of DBMS **(4 Marks)**
v. List five functions of DBMS **(5 Marks)**

**QUESTION TWO**

Why is **DBMS** essential in most organizations? Give **THREE** reasons. **(15 Marks)**

**QUESTION THREE**

List and explain Five main functions of **DBMS** **(15 Marks)**

**QUESTION FOUR**

Explain the following database model.

i. Conceptual data model **(5 Marks)**
ii. Implementation model **(5 Marks)**
iii. Physical level model **(5 Marks)**

**QUESTION FIVE**

Draw and explain five entity relationship diagram notations **(15 Marks)**

**QUESTION SIX**

i. Give **Four** advantages and disadvantages of entity relation diagram **(8 Marks)**
ii. What is a Database network model? **(2 Marks )**
iii. List five advantages of database network model **(5 Marks )**

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FIRST SEMESTER EXAMINATION 2018/2019 SESSION
COURSE TITLE: OPERATING SYSTEM II
COURSE CODE: CMP 312 – 3 CREDIT UNITS — CMP 312

Instructions: Answer Question One (1) & Any Other Two (2) Questions

## SECTION TWO: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS.

1. An Operating System (OS) is a collection of programs that acts as an interface between users of a computer and the hardware. Suitably discuss the:
   a. OS and its Four Components or Subsystems. 10 Marks.
   b. OS as a manger of computer resources. 10 Marks.

2. With the modern day operating systems:
   a. Describe the usability and adaptability qualities of an OS. 8 Marks.
   b. What do you understand as memory allocation with respect to
      i. Single partitioning and 3 Marks.
      ii. Multiple partitioning 4 Marks.

3. In multiprogramming environment, memory sharing and utilization are of paramount concern. With this in view discuss:
   a. Overlay outlining its issues and 7 Marks.
   b. Swapping outlining its benefits and limitations. 8 Marks.

4. Operating system is a manager of resources. Discuss:
   a. Two main functions of OS, with respect to memory and program 5 Marks.
   b. Two classes of OS with respect to batching and sharing 5 Marks.
   c. Three instances of OS. 5 Marks.

5. In a multi-user environment, multi-tasking is brought to bear:
   a. Discuss how a processor executes three distinct Job 1; Job 2; Job 3 seeking its attention. Thus keeping the CPU busy with less idle time. 8 Marks.
   b. Job 1 with 30K, Job2 with 50K, Job 3 with 30K and Job 4 with 50k are seeking the attention of a memory partitioned into 100K; 25K; 25K and 50K. Decide suitably how the Jobs are accommodated in the different memory states. 7 Marks.

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FIRST SEMESTER EXAMINATION 2018/2019 SESSION
COURSE TITLE: DATABASE DESIGN & MANAGEMENT
COURSE CODE: CMP 3~~1~~7 — 2 CREDIT UNITS

**Total = 70 Marks**
**Time Allowed: 2.5 Hours**

Instructions:

- Read the questions carefully
- ANSWER **One** question from **SECTION A** and any **Three** of your choice from **SECTION B**

## SECTION A

1. (a) Describe a Database management system and briefly state the objectives of a Database management system (7 marks)

   (b) Define Normalization and State 3 reasons why normalization is needed. (6 marks)

   (c) Convert the following Data Table to First Normal form(1NF), Second Normal form (2NF) and Third Normal form (3NF) (12 marks)

| Project Number | Project Name | Employer Number | Employer Name | Job Class | Pay per Hour | Assigned Hours |
|---|---|---|---|---|---|---|
| 15 | Mambilla | 103 | Adamu | Programmer | 62.00 | 29 |
| | | 102 | Abdul | Analyst | 62.00 | 35 |
| | | 104 | Kehinde | Database Designer | 58.00 | 27 |
| 18 | Gegeru | 117 | Ibrahim | Analyst | 62.00 | 47 |
| | | 108 | Aisha | Database Designer | 58.00 | 43 |
| | | 107 | Olamide | Programmer | 62.00 | 38 |

2. (a) The database architecture describes the location of all the pieces of information that make up the database application. Discuss the 3 broad classifications of database architecture. (10 marks)

   (b) Briefly describe the four main components of Decision support system (6 marks)

   (c) With the aid of ER diagrams, explain the terms Generalisation, Specialization and Inheritance. (9 marks)

NASARAWA STATE UNIVERSITY, KEFFI

INSTITUTE OF STRATEGIC AND DEVELOPMENT COMMUNICATION

FIRST SEMESTER SCRIPT EXAMINATION

COURSE CODE: SCS 301/401 COURSE TITLE: Science Communication for Scientists

**Instruction: Answer all questions** **Date : 16th December, 2021.**

Q1 A---------takes relevant newsworthy photos while the-----concentrates on gathering information.

Q2. Most media houses in Africa are . . . ....owned.

Q3. A major source of funding for most media houses is by ----------

Q4. Press release is usually written by --------- or ----------

Q5. The heading of a press release should be ----------

Q 6.Media houses structure their content into parts, referred to as

A. Segment B. Sports C. Agriculture

Q7. Online publications (newspapers) have their sections marked on

A. The dateline on top of every page B. their websites C. front desk

Q8. A blog is short for.....

A. Web log B. Internet page C. Videos

Q9. Blog may be..... Or institutional

A. Personal B. Individual C. Collective

Q10. All of the above are ways to build a great blog except

A. Use of Newspaper B. Write good leads C. Use inforgraphics

Q11. List the two ways a scientist can work effectively with a journalist.

Q12 .Briefly outline some of the strategies to be adopted by a scientist while scouting for a scientific journalist to work with

Q13.What is/are the best way(s) to contact a journalist for the first time?

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SA/25

FIRST SEMESTER EXAMINATION 2018/2019 SESSION
COURSE TITLE: Compiler Construction
COURSE CODE: CMP 314 3 Units — CMP 314

**Instructions:** Answer Question One (1) and Any Three (3) Others. You can attempt only one of Questions 5 & 6, not both.
Question 1 Carries 22 Marks while other Questions have 16 Marks Each

Total = 70 Marks
Time Allowed: 3 Hours

**Question 1**

Study the following grammar of a programming language written in BNF notation, and answer the questions that follow. The symbols ::= and | are meta symbols and not part of the language.

<program> ::= { <declaration> <statement> }
<statement > ::= <assignment>|<ifthenelse>
<declaration> ::= INT <identifier>;|<identifier>,...,<identifier>;|
REAL <identifier>;|<identifier>,...,<identifier>;
< assignment> ::= <identifier> = <expression>
<identifier> ::= <letter><letter>|<letter><digit><digit>|<letter><digit><digit><letter>
< expression> ::= <term>|<term><relop><term>
< relop> ::= <|<=|>|>=|==|!
<term> ::= <factor>|<factor>+<factor>|<factor>+<factor>+...+<factor>
<factor> ::= <primary>|<primary>@<primary>
< primary> := <identifier>|<integer number>|<real number>|(<expression>)
< ifthenelse> ::= IF<expression>THEN<statement>ELSE<statement>
<letter> ::= d|e|f|g|h|p|r|s|t|w|x|y|z|
< integer number> ::=<digit><digit>|<digit>0<digit>|<digit>1<digit>9<digit>
<real number> ::= <digit>.<digit>|<digit><digit>.<digit><digit>|0.<digit><digit>
<digit> ::= 2|3|4|5|6|7|8|

*QUESTIONS* (a) Give (i) three examples of three correct identifiers corresponding to the three forms of definitions of an identifier respectively, without repeating any letter in any example. (3 marks). (ii) three correct integer numbers corresponding to the three forms of definitions of an integer number respectively, without repeating any digit in any example. (3 marks). (iii) three examples of correct real numbers corresponding to the three definitions of a real number respectively without repeating any digit in any example. (3 marks) (b) Declare two integer numbers, and use them to give an example of a correct assignment statement in the language. (4 marks) (c) If the above grammar is a phrase structure grammar defined as $G = (V_N, V_T, P, S)$ what represent $V_N$, $V_T$? (2marks). (d) What suggests that the above grammar is context-free? (2 marks). (e) Write the correct version of the following statement written in the language but has some errors: IF a=x THEN p==a ELSE p =+ b ***(Hint: There are five errors in the statement).*** (5 marks).

$V_N$ = non-terminal symbol
$V_T$ = Terminal Symbol

**Question 2**

Arrange the terms on the following list in a table with three columns having column names as COMMON, ASSEMBLERS, COMPILERS, to respectively show (i) under COMMON the terms common to both assemblers and compilers. (ii) under ASSEMBLERS the terms applicable to assemblers only. (iii)under COMPILERS the terms applicable to compilers only: parse tree; two-pass; machine dependent; symbol table; object program; translator; phrase name; linkers and loaders; hashing function; opcode table; rewriting rule; optimize tree; high level languages; binary search; mnemonics; JAVA. (16 marks).

**Question 3**

Below is a sketch of a segmented memory with bytes numbered as shown, and Programs OM1, OM2, OM3 are respectively stored in the segments as shown. Assume that the programs are to be relocated into a single linear

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## FIRST SEMESTER EXAMINATION 2020/2021 SESSION

COURSE TITLE: Compiler Construction

COURSE CODE: CMP 314 **Time Allowed: 3:00hrs**

Instructions: Please read through all the questions first, don't directly attempt one problem as you may miss easier one. Make your writing legible as well as your diagrams where necessary.

**SECTION A: Answer All the Multiple Choices Questions** **15 Marks**

1. A compiler is preferable to an interpreter because
   a. Debugging can be faster and easier
   b. If one changes a statement, only that statement needs re-compilation
   c. It is much helpful in the initial stages of program development
   d. It can generate stand-alone programs that often take less time for execution

2. The action of parsing the source program into proper syntactic classes is called
   a. General syntax analysis
   b. Interpretation analysis
   c. Syntax analysis
   d. Lexical analysis

3. What is the output of lexical analyzer?
   a. A set of RE
   b. Syntax Tree
   c. Set of Tokens
   d. String Character

4. Which of the following are Lexemes?
   a. Identifiers
   b. Constants
   c. Keywords
   d. All of the mentioned

5. Users write the programs in which language?
   a. Low-level Language
   b. High-Level Language
   c. Decimal-Format
   d. Middle-Level Language

6. Does the compiler program translate the whole source code in one step?
   a. No
   b. Depends on the Compiler
   c. Don't Know
   d. Yes

7. Which tool is used for grouping of characters in tokens in the compiler?
   a. Parser
   b. Code optimizer
   c. Code generator
   d. Scanner

8. What is the linker?
   a. It is always used before the program execution.
   b. It is required to create the load module.
   c. It is the same as the loader
   d. None of the above

9. From the following grammars, which describes the lexical syntax?
   a. Lexical Grammar
   b. Context-free Grammar
   c. Syntactic Grammar
   d. Regular Grammar

10. Which is considered as the sequence of characters in a token?
    a. Mexeme
    b. Lexeme
    c. Texeme
    d. Pattern

11. Which part of the compiler highly used the grammar concept?
    a. Code optimization
    b. Code generation
    c. Parser
    d. Lexical Analysis

12. Which phase of the compiler checks the grammar of the programming?
    a. Code Optimization
    b. Semantic Analysis
    c. Code Generation
    d. Syntax Analysis

13. Which of the following component is important for semantic analysis?
    a. YACC
    b. Lex
    c. Symbol Table
    d. Type Checking

14. Which phase of the compiler is also known as Scanner?
    a. Syntax Analysis
    b. Lexical Analysis
    c. Semantic Analysis
    d. Code generation

15. Which of the following is used in various stages or phases of the compiler?
    a. Records
    b. Program
    c. Symbol Table
    d. Table

**SECTION 2: ANSWER ANY THREE. EACH CARRIES 15 Marks**

1. With the aid of an appropriate diagram, explain any three (3) of the following (5 Marks Each):
    i. Code generator
    ii. Lexical analysis
    iii. Semantic analysis
    iv. Syntax analysis
    v. Code optimiser

    15 Marks

2. Explain
    a) What are regular expressions? 2 Marks
    b) How interpreters are related with compilers 3 Marks
    c) In a tabular form the description of the following set of strings:
        i. {"a"}
        ii. {" "}
        iii. L(s)UL(t)
        iv. {vw|v∈L(s), w∈L(t)}
        v. {" "}U{vw|v∈L(s), w∈L(s*)}

    10 Marks

3. Compilation of a program from the source to target language is done in phases
    a) Illustrate with diagram from source to object program how these phases are categorised 5 Marks
    b) With suitable diagram that depicts the symbol table manager and the Error handler explain how a source program gets compiled to the target program. 5 Marks
    c) Depict, with suitable block diagram, the structure and functional aspect of the compiler explaining the front and back end. 5 Marks

4a. Write short note comparing any two of the followings: Compiler; Interpreter; Assembler 5 Marks

b. Using the grammar with its productions below show how the parsing techniques work in
    1. Top Down and 5 Marks
    2. Bottom Up 5 Marks

    For the S→aABε
        a) A→Abc/b
        b) B→d with the input string w={abbcdε}

5: Explain
    1. What is Shift Reduce Parsing? 3 Marks
    2. The two classifications of Top-Down Parsing 4 Marks
    3. The reduction of string to the starting symbol of this grammar using the SRP

    S→S+S
    S→S-S
    S→(s)
    S→a with input string: $a_1$-($a_2$+$a_3$)

    8 Marks