

DEPARTMENT OF COMPUTER SCIENCE
FINAL EXAMINATION SEPTEMBER 2022 SEMESTER
BCSC 4108 SYSTEMS PROGRAMMING

DATE: SEPTEMBER 2022

TIME: 2 HOURS

INSTRUCTIONS:

- i. Answer all questions in SECTION I and Choose Two from SECTION II.*
 - ii. Do NOT write on the Question Paper*
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SECTION I

QUESTION ONE (COMPULSORY) (30 Marks)

- a) Assess any **TWO** factor that might have lead to the rise of the system programming.
(6 Marks)
- b) Explain any **THREE** reason why the assembly language is used in system programming
(6 Marks)
- c) Discuss any drawback of the assembly language in system programming. (3 Marks)
- d) Differentiate between a byte from nibble as used in System Programming. (4 Marks)
- e) Discuss **TWO** different types of Registers and their roles as used in system programming.
(6 Marks)
- f) Discuss the processes that we can adopt when developing an assembler in System programming.
(5 Marks)

SECTION II

QUESTION TWO

(20 Marks)

- a) Describe **TWO** roles of the base registers as implied in System Programming. (4 Marks)
- b) There are different types of instructions that differ in the type of operands they use.
Describe **THREE** types of these instruction by the type of operands they use. (6 Marks)
- c) Declare an Array in C or C++, named balance of data type double for ten elements.
(6 Marks)
- d) Explain any **TWO** possible way to represent binary Trees Data in System programming.
(4 Marks)

QUESTION THREE

(20 Marks)

- a) Discuss an Assembler and one of its main task as used in System Programming. (4 Marks)

- b) Describe the SIX general design procedure in which all software is designed and should be known before designing an assembler. **(6 Marks)**
- c) Discuss the role of the following terms as used in systems programming. **(4 Marks)**
 - i. Assembler
 - ii. Loader
- d) Differentiate between an execution time and the load time as implied in systems programming. **(4 Marks)**
- e) Explain what you understand by the term Macros as implied in systems programming. **(2 Marks)**

QUESTION FOUR **(20 Marks)**

- a) By aid of an example, explain what you understand by the term in systems programming. **(4 Marks)**
- b) Discuss the difference between a compiler and a Linker. **(4 Marks)**
- c) Discuss the processes that we can adopt when developing an assembler in System programming. **(6 Marks)**
- d) Represent the Foundation of systems programming by aid of a diagram. **(4 Marks)**

QUESTION FIVE **(20 Marks)**

- a) Discuss the general hardware organization of a computer system by aid of a diagram **(5 Marks)**
- b) Summarize any FIVE role of the following components as used in the general hardware organization of a computer system. **(4 Marks)**
 - i. Memory
 - ii. Bits
 - iii. Programs
 - iv. Processors
- c) Discuss why creating impure procedures in systems programming is regarded as a poor programming practice. **(5 Marks)**
- d) Different between a pure procedure and impure procedure as implied in systems programming. **(6 Marks)**