

Fundamental of Computer Problem Solving (CSC 128) – Final Exam Format and Frequent Questions

Azlina Mohd Mydin, Wan Anisha Wan Mohammad and Naemah Abdul Wahab
azlin143@uitm.edu.my, wanan122@uitm.edu.my, naema586@uitm.edu.my

Jabatan Sains Komputer & Matematik (JSKM), Universiti Teknologi MARA Cawangan Pulau
Pinang, Malaysia

Introduction

Fundamental of Computer Problem Solving (CSC 128) is one of the servicing papers offered in UiTM for diploma students. The subject is taken by student from mechanical engineering, civil engineering, actuarial science and statistic. This course contains three (3) credit hours with two (2) hours for lecturing and another two (2) hours for lab session. The main purpose of this paper is to introduce problem solving using computers. It also emphasizes various aspects of problem solving, phases of problem solving and basic techniques in designing a solution using C++ language. CSC128 also emphasis on solving problems using computer rather than the syntactical aspects of the chosen programming language which is C++.

There are five (5) main topics covers in CSC128, the first topic are the introduction to computer programs, the second topic are component of a programming language, then continue with selection control structure, followed by repetition control structure and the last topic will be function topic. The assessment format for this CSC128 is 50 % from ongoing assessment and another 50% from final exam. The ongoing assessments include tests, quizzes, individual assignment, and group project.

In Universiti Teknologi MARA Cawangan Pulau Pinang, Malaysia, CSC128 are taken by diploma students from civil and mechanical engineering programme. For civil engineering students they are planned to take in semester two (2) while for mechanical engineering students, it is being offered in semester four (4). This course has been offered here since 2009.

Final Exam Format

As mentioned earlier, CSC128 have final exam that contribute 50 % of the overall result. Examination duration for the final exams takes three (3) hours. The total marks for this final paper are 100 marks. The final paper has three (3) parts. Part A for objective question consists of ten (10) questions which contribute 20 marks. Part B contribute 50 marks contains five (5) short questions and part C consists of two (2) discussion question that contribute 30 marks. Figure 1 below illustrates the format structure for the CSC128 final exam paper.

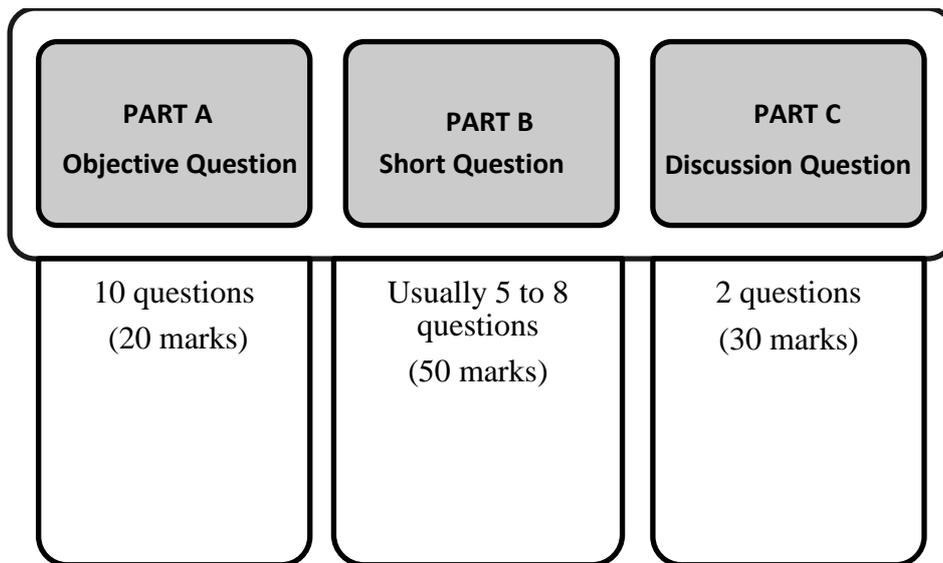


Figure 1. Examination Paper Format Structure

The objective questions usually will cover all the chapters. The frequent question type asked in objective will be basic definition, understanding of a process and examples. Besides that, tracing simple output for program is also often being asked here. Minimum one question will be asked from each chapter.

The part B questions also will cover all the chapters. In this part, the questions are arranged by chapter sequence. The difficulties of the question also will increase as its goes. There will be sub questions given here. Usually, the marks in this part will be from 1 to 10 marks by question and sub questions. The question types in this part are listed below:

- i. Explanations and definition question
- ii. Simple calculation questions
- iii. Write the program statement
- iv. Tracing output
- v. Rewrite the program given
- vi. Draw flowchart based on problem statement

Part C is known as discussion questions. Here the full marks given are 30 marks. The questions here are to write a full program based on the problem statement given. There will be two (2) questions in this part and the marks are evenly distributed. There are also sub questions in part C.

Frequent Question by Chapters

In the early part, final examination structure has been discussed. Now, the discussion will be detailed up by chapters. Every chapter have few topics that should be focused. Table 1 below shows the chapters and the topics that are frequently being asked in final examination by parts.

Table 1: Chapter and Topics in Final Examination by Parts.

Chapters/Topics	Part A	Part B	Part C
Introduction to computer programs			
i. Introduction to Programming Program	√	√	
ii. Development Life Cycle	√	√	
Chapter 2: Component of a programming language			
i. Identifier, variable, constant, reserved word	√		
ii. Basic data types	√		
iii. Arithmetic operators, precedence and expression	√	√	
iv. Assignment Statement			
v. Input/output statement		√	
vi. Debugging and error handling Types of control structures	√	√	
Chapter 3: Selection control structure			
i. Boolean values and expression	√		
ii. Relational and logical operators			
iii. Types of selection control structures (one-way: if, two-way:if-else and multiple-way:switch-case)	√	√	<i>1 Question</i>
iv. Nested selection control structure (nested if)	√		
Chapter 4: Repetition control structure			
i. Requirements and operation in repetition control structure	√	√	
ii. Types of repetition control structures (for, while and do...while)	√	√	
iii. Nested loop	√		
Chapter 5: Function			
i. Introduction to functions	√		
ii. Function call	√	√	
iii. Library functions	√		<i>1 Question</i>
iv. User-defined	√	√	
v. functions Parameter passing (pass-by-value and pass-by-reference)	√	√	

From the table above, there are frequent topics which are being asked in final examination in every chapter. Actually, the frequent questions are based on the basic understanding of programming. Besides that, the aims of this paper to test their understanding and their capabilities to apply the concept in any kind of problem statement.

For topics in chapter one (1), questions based on definition and explanation of computer type, computer functions and program will be frequently asked. Besides that, the explanations of steps in PDLC are also very famous in final examination.

For chapter two (2), topics on arithmetic operators will always be asked in the final examination paper. Here, the examiner wants to identify whether the student really understands the operator and the calculation concepts in programming. Data type and variable topic is the basic concept of writing a program, so it will be tested too usually in part A and part C. Writing simple program and a part of program segment using sequential control structure also will be evaluated usually in part B. Topic on error handling is also very important because as a programmer, the student has to understand where or how the mistakes is being done during the program implementation and coding.

For chapter three (3) and four (4), the overall concept of selection and repetition method will be tested. Usually, problem statements are given and are applied to all type of selection and repetition method. Sometimes, tracing output question are also applied in this topics to test the understanding of these control structure.

For chapter function, usually the understanding about the function element and parameter passing process will be tested in part A and part B. Writing a full program which involved function will also be asked in part C.

Conclusion

CSC128 is a servicing subject for certain courses and the students are novice students. The syllabus for this subject is being designed appropriately according to the curriculum and programme needs. The assessments for CSC128 are also convenient and allow the student to score well in this subject. As the student preparation, they have to make sure they understand and are able to apply the concept of programming in the correct situation. They have to really identify the program structure in order to help them solve the problem.

References:

Anisha, W., Azlina, M. (2019). Introduction to C++ Programming (2nd ed.), Oxford Fajar

www.aims.uitm.my

<https://koleksi.uitm.edu.my/eqps/>

<https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/developing-assignments/exams/questions-types-characteristics-suggestions>