



PAN AFRICA CHRISTIAN UNIVERSITY

(DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY)

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT0113 / CICT0113

CAMPUS: ROYSAMBU

COURSE TITLE: PRINCIPLES OF PROGRAMMING AND ALGORITHMS

EXAM DATE: WEDNESDAY, (-- APRIL 2023)

TIME: 08:00AM-11:00AM

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer ALL questions in Section **A** and any other **THREE** questions in Section **B**.

SECTION A

(Answer ALL questions in this section)

SECTION A (10 Marks)

Question 1:

a. Discuss the below concepts as used in programming

i. Write an algorithm to calculate the sum and average of four numbers.

[2

Marks]

ii. Draw a flow chart to represent the logic in a (i) above.

[2 Marks]

b. Write a C program that would be used to output the pattern below.

[6 Marks]

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SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

- a. Discuss **two** characteristics of low level programming languages versus high level programming languages. **[4 Marks]**
- b. The table below was used by a certain college to award grades to students in an examination. Use it to answer the question that follows

Range of Marks	Grade
Above 100	Invalid marks
From 70 to 100	A
From 60 to 69	B
From 50 to 59	C
From 40 to 49	D
Less than 39	F
Les that 0	Invalid marks

Write a C program that would prompt the user to enter the marks obtained by a student. The program should then output the grade. Use if else statement. **[6 Marks]**

Question 3:

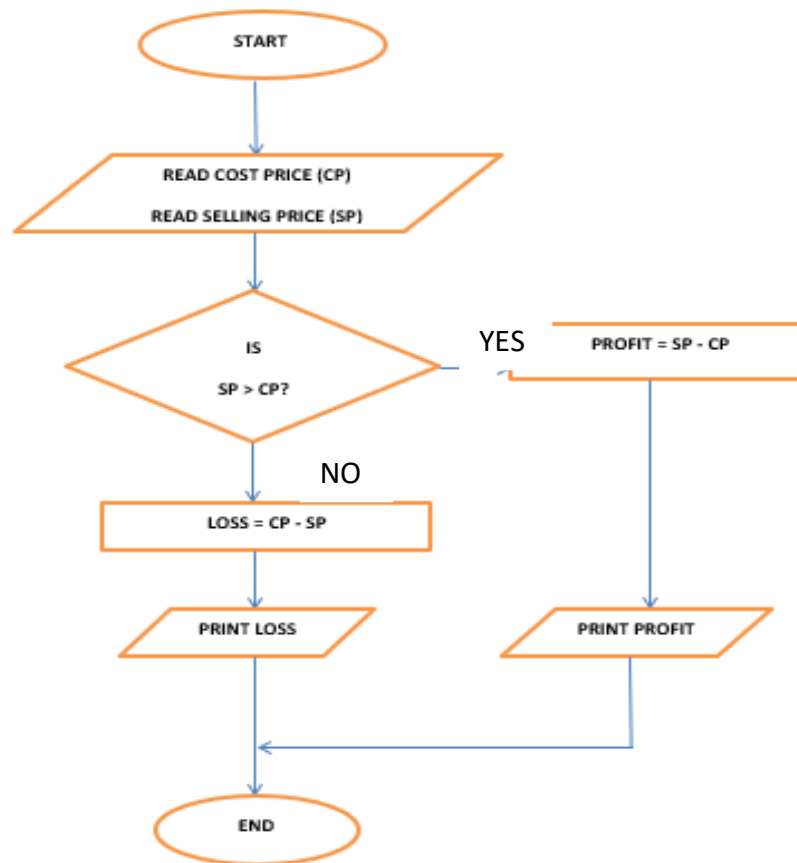
- a. Differentiate between a compiler and an interpreter as used in programming. **[4 Marks]**
- b. Write a C program that prompts the user to enter the age of a person. The program then displays the age and a message “you are an adult” whenever the age is greater than 18 years else “you are underage”. **[6 Marks]**

Question 4:

- a. The diagram below shows a flowchart. Discuss the various stages of the flowchart and determine the output that gives the values below. **[5 Marks]**

CP = 325

SP = 458



- b. Write a C program that would display even numbers between 2 and 10. Use a while loop.

[5

Marks]

Question 5:

- a. The table shows the criteria used by PAC University to admit applicants to various course levels. Use it to answer the question that follows:

KCSE GRADE	COURSE LEVEL
A	Masters course
B	Degree course
C	Diploma Course
D	Certificate course

Write a C program that prompts a user to enter the grade obtained. The program should then output the course level the applicant is qualified to join. Use switch-case control structure.

[6

Marks]

- b. Explain two types of errors that are likely to occur during a program compilation.

[4

Marks]

Question 6:

- a. Write a C program that would be used to calculate the area of a cylinder. **[5 Marks]**
- b. Write a C program that would prompt the user to insert 5 values and store them in an array. **[5 Marks]**

THE END