

**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION MAY, 2016 (SEM-II)**

Title of the Paper : STRUCTURED PROGRAMMING - II

Course Number : CS244

Time Allowed : Three (3) Hours

Instructions: This exam has pages from 1 to 3. The **Exam userid, password, tree, context and server name** will be provided by the chief invigilator.

1. Write pseudo codes and file specifications of all the files in the root of your network drive F:\ in your folder.
2. Submit folder, signed listings of printed programs and report files.
3. Use the last 10 minutes to check your submissions (which includes IPO, pseudo codes, file specifications, signed listings of your programs and report files)

Read the paper carefully and completely before starting to work on the problem.

The names of program and report files should be –

----- .cpp (Program file) and
----- .TXT (Report file)

The dashes in file names are six digits of your UNISWA id.

Special requirements: For each student

1. A networked PC with working C++ system.
2. An accessible secure network disk (F:\) & Printing facility.

This paper should not be opened until permission has been granted by the invigilator.

MARKING SCHEME: Pseudo code (30 %), Results (20 %), Program (50 %)

PROBLEM: Information about marks obtained by UNISWA students in a course are given in a text file 'F:\DATA2016.TXT'. Each record of this file has the following -

Student Name	15 characters
Student Id	6 digits - long integer
Test1 marks	real number – 2 digits before and after decimal
Test2 marks	real number – 2 digits before and after decimal
Exam marks	real number – 2 digits before and after decimal

Each of the above marks are in percentages (out of 100).

Each field has been separated by a space character and Id in sentinel record is zero.
Example of a record -

```
BENNET L.A.      120786 70.50 60.00 71.50
      1           2           3           4 {ARE COLUMN NOS}
12345678901234567890123456789012345678901
```

Write pseudo code and a corresponding well documented and properly indented C++ program that does the following –

1. Reads in all the data from 'F:\DATA2016.TXT'.
2. Computes the Course Work Mark (CWM), Final Mark (FM) and grade for each student and displays the information on a report file ('----- .TXT').
3. The six dashes in the report file name are six digits of your id number.

NOTES:

1. Course Work Mark (CWM) is the average of Test1 and Test2 marks.
2. Final Mark (FM) is 40% of CWM and 60% of Exam marks.
3. A function should be declared to find the 2 character grade from Final Mark (FM) according to the UNISWA rules
(i.e. FM in [90, 100] → A+, FM in [85, 89] → A, FM in [80, 84] → A-,
FM in [75, 79] → B+, FM in [70, 74] → B,
FM in [65, 69] → C+, FM in [60, 64] → C,
FM in [55, 59] → D+, FM in [50, 54] → D,
FM in [45, 49] → E+, FM in [40, 44] → E and FM in [0, 39] → F)

4. The contents of 'F:\DATA2016.TXT' are -

BENNET L.A.	120786	70.50	60.00	71.50
THWALA D.M.	120251	80.00	94.50	80.00
BEATRIC S.P.	120786	50.00	51.00	50.00
DVUBA M.	120197	62.00	57.00	50.00
SIBISI J.N.	120630	78.00	85.00	60.00
VILAKATI K.	120246	51.00	55.00	41.00
SISA D.M.	120240	50.00	30.00	50.50
SENTINEL DATA	000000	00.00	00.00	00.00

The report lay out should be -

REPORT PRODUCED BY THE PROGRAM OF

<YOUR ID>

UNIVERSITY OF SWAZILAND, FACULTY OF SCIENCE & ENGG
DEPARTMENT OF COMPUTER SCIENCE,
CS244 MARK SHEET MAY 2016

ID	NAME	TEST1	TEST2	CWM	EXAM	FM	GRADE
-----	-----	---.---	---.---	---.---	---.---	--	--
-----	-----	---.---	---.---	---.---	---.---	--	--
-----	-----	---.---	---.---	---.---	---.---	--	--

...

SUMMARY

COUNT OF STUDENTS IN THE CLASS	=	----
COUNT & PERCENTAGE OF PASSED STUDENTS	=	---(---.---)
COUNT & PERCENTAGE OF FAILED STUDENTS	=	---(---.---)

PERCENTAGE OF STUDENTS WITH A+ GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH A GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH A- GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH B+ GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH B GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH C+ GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH C GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH D+ GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH D GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH E+ GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH E GRADE	=	---.---
PERCENTAGE OF STUDENTS WITH F GRADE	=	---.---

<END OF EXAMINATION PAPER>