

University of Swaziland

Department of Computer Science

Final Supplementary Examination: July 2018

Title of paper : Computer programming II

Course Number: CSC213

Time Allowed: Three (3) hours

Instructions :

1. This exam has pages from 1 to 3.
2. The Exam user_id, password, tree, context and server name will be provided by the chief invigilator.
3. Write pseudo code in the provided answer folder.
4. Submit folder, signed listings of printed programs and report files.
5. Use the last 10 minutes to check your submissions (pseudo codes, file specifications, signed listings of your programs and report files)
6. Read the paper carefully and completely before starting to work on the problem.
7. The names of all your files(project, source file and data files) should have following format

S-----(Project Name)

S-----.cpp (Program file)

S-----.TXT (data files)

The dashes in file names are six digits of your UNISWA student identity number.

Special requirements:

For each student

1. A networked PC with working C++ system.
2. An accessible secure network drive & Printing facility

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

ANSWER FORMAT:

1. Write (in your answer folder) a description of the input, output, processing performed and a detailed pseudocode.
2. Implement in C++. Compile and test your code.
3. Provide sufficient comment in your source code.
4. Output from your program must be properly formatted.

MARKING SCHEME:

Question will be marked using following scheme: Pseudo code (30 %), Program (50 %) and Results/output (20 %),

PROBLEM:

Consider a file containing employee records. Each line records the name, surname, rate of pay per hour, followed by a list of values indicating the number of hours worked per week. A sample is shown below.

Musa	Khumalo	:	10	30 36 42 52
Lucky	Masuku	:	5	40 40 37 48 48
Sibongakonkhe	Langa	:	12.5	48 52 32
Langalibalele	Mtetwa	:	7.50	45 31 50 41 62
Jane	Smith	:	15	40
Nomsa	Dlamini	:	8.25	8 54 40 40
Siphosethu	Gumbi	:	15	40 55

In this example, Employee Musa Khumalo earns 10 emalangeneni per hour, and worked 30 hours in the first week and 36 hours in the second. In addition, he worked 42 and 52 hours in the third and fourth weeks, respectively.

Your task is to write a program that processes any file of the given format, and writes the surname, name, surname and rate of pay per hour for each employee to an output file. In addition the program computes, and writes to the output file, the total hours worked by each employee, as well as the gross pay, tax payable and net pay.

- **Total hours worked** - is the sum of the hours worked each week.
- **Gross pay** -rate of pay per hour multiplied by total hours worked

- **Tax payable** - The tax payable is 0 if the amount is less than or equal 1000 emalangeni. Otherwise, the tax payable is calculated at 33% of the amount exceeding 1000 emalangeni.
- **Net pay** = Gross pay less tax payable

Based on the sample data shown above, the output file should appear similar to figure below:

Employee Name	Hourly Rate	Hours Worked	Gross Pay	Tax Payable	Net Pay
Khumalo Musa	10.00	160	1600.00	198.00	1402.00
Masuku Lucky	5.00	213	1065.00	21.45	1043.55
Langa Sibongakonkhe	12.50	132	1650.00	214.50	1435.50
Mtsetwa Langelibalele	7.50	229	1717.50	236.78	1480.72
Smith Jane	15.00	40	600.00	0.00	600.00
Dlamini Nomsa	8.25	142	1171.50	56.60	1114.91
Gumbi Siphosethu	15.00	95	1425.00	140.25	1284.75

The program must also display, standard output the following summary:

Number of Employees =

	Min Value	Max Value	Mean	Std. Dev.
Pay Rate per Hour	-----	-----	-----	-----
Total Hours worked	-----	-----	-----	-----
Gross earnings	-----	-----	-----	-----
Payable Tax	-----	-----	-----	-----
Net Earnings	-----	-----	-----	-----

END OF EXAMINATION