UNIVERSITY OF BUEA (UB)
FIRST SEMESTER EXAMINATIONS
2011/2012 ACADEMIC YEAR
Faculty: FACULTY OF ENGINEERING AND TECHNOLOGY
Department : COMPUTER ENGINEERING
Subject Title: PROGRAMMING 1
subject Code: CEF 207
COURSE INSTRUCTOR: EGBE
Date: THU 22/03/2012 Time: 11:30 – 14:30

Time 3 hours
instructions: Answer FOUR Questions.
You are reminded of the necessary for good English and orderly presentation in your answers.

Q1. (a) Explain using examples the meanings of the following.
(I) algorithms (5 marks)
(ii) Pseudocode (5marks)
(iii)Flow chart (5 marks)

(b) A person invests 1.000.000frs (one million francs) in a saving account yielding 5% interest. Assuming that all is left on deposit in the account. Write a C program to calculate and print the amount of money in the account at the end of each year for 10 year. Use the following formula for determining these amounts. (10 marks)

$$A=P\,(1+r)^n$$

Where
P is the original amount invested (i.e. the principal)
r is the annual interest rate.
N is the number of years.
A is the amount on deposit at the end of nth year.

Q2 (a) Explain the meaning of sentinel- controlled repetition. (5 mark)
(b) A company pays its employees as manager (who receive a fixed weekly salary)hourly workers (who receive a fixed hourly wage for up to the first 40 hours they work and "time-and-a-half".i.e.1.5 times their hourly wage, for overtime hours worked) commission workers (who receive 50,000frs CFA plus 5.7% of their gross weekly sales). Write a program to compute the weekly sales for each employee. You do not know the number of employee in advance. Each type of employee has its own pay code: Managers have pay code 1, hourly workers have code 2, commission workers has pay code 3

Q3. (a) Write a C statements to accomplish each of the following tasks.
(I) Sum odd integers between 1 and 99 using for structure. (2 marks)
(ii) Calculate the value of 2.5 raised to the power of 3 using pow function. Print the result with a precision of 2.
(iii) Print the integers from 1 to 20 using a while loop and a counter variable x. Assume the variable x has been declared but not initialized. Print only five integer per line.
(iv) Repeat (iii) using a for structure. (3 marks)
(b) Write a C program that inputs three different integers from the keyboard, and print the sum, the average, the product, the smallest, and the largest of these numbers. Your program should clear show separate function for sum, average, product, smallest and largest of these numbers. (15 marks)

Q4 (a) (I) What is a static variable? (2 marks)
(ii) What is an automatic variable? (2 marks)

(iii) What are function prototypes? (2 marks)
(iv) What are Arrays (2 marks)
(b) Write statements that perform each of the single – subscripted array operations:
(I) Initialized the 10 elements of an integer array counts to zeros. (2 marks)
(ii) Read the 12 values of floating point array monthly temperatures from the keyboard. (2 marks)
(iii) Sum and print the 10 elements of an array a. (3 marks)
(c) Using array, roll a single six – sided die 6000 times to test whether the random number generator evenly distribute the random number it produces. Your program should output the results in a tabular form. (10 marks)
Q5. Forty students were asked to rate the quality of food in the UB student restaurant on the scales of 1 to 10 (1 means awful and 10 means excellent). The 40 responses obtained were place in an integer array responses [40] =
{1,2,6,4,8,5,9,7,8,10,1,6,3,8,6,10,3,8,2,7,6,5,7,6,8,6,7,5,6,6,5,6,7,5,6,4,8,6,8,10};
(a) Write a program to sort the array's elements in ascending order. (10 marks)
(b) Write a C program to calculate the mean and median mode for the survey. (15 marks)