**Baku Higher Oil School**

**Process Automation Engineering Department**

**Programming in C**

**Laboratory 7 – Structure**

**P.S** Add comment for each task; submit the file in LMS before the deadline.

1. Provide the definition for each of the following structures:
2. Structure inventory containing character array partName[30], integer partNumber, floating-point price, integer stock and integer reorder.
3. A structure called address that contains character arrays streetAddress[25], city[20], state[3] and zipCode[6].
4. Structure student that contains arrays firstName[15] and lastName[15] and variable homeAddress of type struct address from part (b).
5. Given the following structure and variable definitions,

**struct** customer {

**char** lastName[15];

**char** firstName[15];

**unsigned** **int** customerNumber;

**struct** {

**char** phoneNumber[11];

**char** address[50];

**char** city[15];

**char** state[3];

**char** zipCode[6];

} personal;

} customerRecord, \*customerPtr;

customerPtr = &customerRecord;

write an expression that can be used to access the structure members in each of the following parts:

1. Member *lastName* of structure *customerRecord*.
2. Member *lastName* of the structure pointed to by *customerPtr*.
3. Member *firstName* of structure *customerRecord*.
4. Member *firstName* of the structure pointed to by *customerPtr*.
5. Member *customerNumber* of structure *customerRecord*.
6. Member *customerNumber* of the structure pointed to by *customerPtr*.
7. Member *phoneNumber* of member *personal* of structure *customerRecord*.
8. Member *phoneNumber* of member *personal* of the structure pointed to by *customerPtr*.
9. Member *address* of member *personal* of structure *customerRecord*.
10. Member *address* of member *personal* of the structure pointed to by *customerPtr*.
11. Member *city* of member *personal* of structure *customerRecord*.
12. Member *city* of member *personal* of the structure pointed to by *customerPtr*.
13. Member *state* of member *personal* of structure *customerRecord*.
14. Member *state* of member *personal* of the structure pointed to by *customerPtr*.
15. Member *zipCode* of member *personal* of structure *customerRecord*.
16. Member *zipCode* of member *personal* of the structure pointed to by *customerPtr*.
17. Write Create structure person with members name (char), age (int) and city (char) and student structure with major(char) and grade (int). Student structure includes struct person info.

Create nested structures and enter information of three students.

1. Elements of array is struct Book with title(char), author(char), year(int). Create array of structures that store information of three books and print it. Use pointer.
2. Create structure Student with name (char) and grade (int) members. Create ScanValues and PrintValues function to read and print the values of all 5 objects. Then, find the average of grades and print it with function.
3. **Returning multiple values (function) using structures:** Define a structure with 2 integer variables and store the smaller and greater values into those variables. User enter 2 variables, program should compare them and print the smaller and greater values using structure.