1. Be able to recognize and match definitions or descriptive phrases of the following terms:

dynamic memory allocation, class, typedef, array, object, struct, linked list, malloc, address operator, dereference, string, header file, NULL, public data member, private data member, constructor function, destructor function

2. Circle T (True) or F (False) as applicable for the following statements.

T F A pointer variable contains the address of a memory location.
T F A structure definition allocates memory.
T F In C, parameter-passing is done by call-by-value.
T F C++ is an object oriented programming language.
T F Elements of an array can be accessed using pointer arithmetic.
3. Consider the following declarations:

```c
struct data {
    int count;
    int values[10];
};
struct data myData, *pdata = &myData;
```

(a) Write assignment statements that assign the value 10 to count field of myData using the variable myData and the pointer pdata.

(b) Write a loop that assigns values 1 to 10 (in order) to the values array of myData using the variable myData.

(c) Write a loop that assigns values 1 to 10 (in order) to the values array of myData using the pointer pData and pointer arithmetic.

4. (a) Define a data structure called student that has three data members: 1) name: a character string (at most 50 characters long), 2) number: an integer value, 3) major: a character string (at most 10 characters long).

(b) Declare an instance of this data structure and initialize it with the following values: “Alan Turing”, 1936, “CMPSC”.

5. Consider the following data structure:

```c
struct node {
    int data;
    struct node *next;
};
typedef struct node Node;
```

(a) Implement the function print below, which traverses a linked list and prints the data values of the items in the list to standard output.

```c
void printList(Node *head) {
    /* write the function body */
}
```

(b) Consider the following two function declarations for appending a node with a given value to the end of a linked list. Which one is the correct declaration and why?

```c
void appendItem(Node *head, int value);
void appendItem(Node **head, int value);
```
6. Write a C++ program that reads an integer value from standard input and writes the read value to the standard output. Use `cin` and `cout` objects for input and output.

7. Declare a C++ class called Date with year, month and day fields which are all integers, and with `getYear`, `getMonth`, `getDay` methods which take no argument and return an integer, `setYear`, `setMonth`, and `setDay` methods which take a single integer argument and do not return a value. Show the implementations of the methods.