1. Write a complete C program that reads one character from the keyboard and writes it to the screen.

2. Write a C expression that prints a float variable \texttt{x} to the screen showing 7 decimal places in scientific format.

3. Consider the \texttt{Room} class, containing strings for \texttt{name} and \texttt{floor} type and integers \texttt{length} and \texttt{width}.
   
   (a) Write a class definition with a constructor, accessors, mutators, copy constructor and overloaded \texttt{<<} operator.

   (b) Implement all the class functions.

4. Define a class \texttt{house} that contains an integer number of rooms and a list of rooms. Use a linked-list implementation and the \texttt{Room} class to implement the list of rooms. Define, but do not implement, a constructor, accessors and mutators.

5. The following C++ code creates a list and prints the list data. Identify and explain the four errors in the code.

```cpp
#include <iostream>
using namespace std;

int main()
{
    struct node {
        int data;
        node * next;
    }

    int i;
    node *n;

    // create empty list
    node * list() = NULL;

    // insert five nodes at front of list
    for (i=0;i<=5;i++)
    {
        n = new node;
        n->data = i;
        n->next = list;
    }

    // print list
    n = list;
    while (!n)
    {
        cout << n->data << " ";
        n = n->next;
    }
    cout << endl;

    return 0;
}
```