PRIFYSGOL
BANGOR
UNIVERSITY

Imperative Programming in C

Laboratory 10: Linked Lists

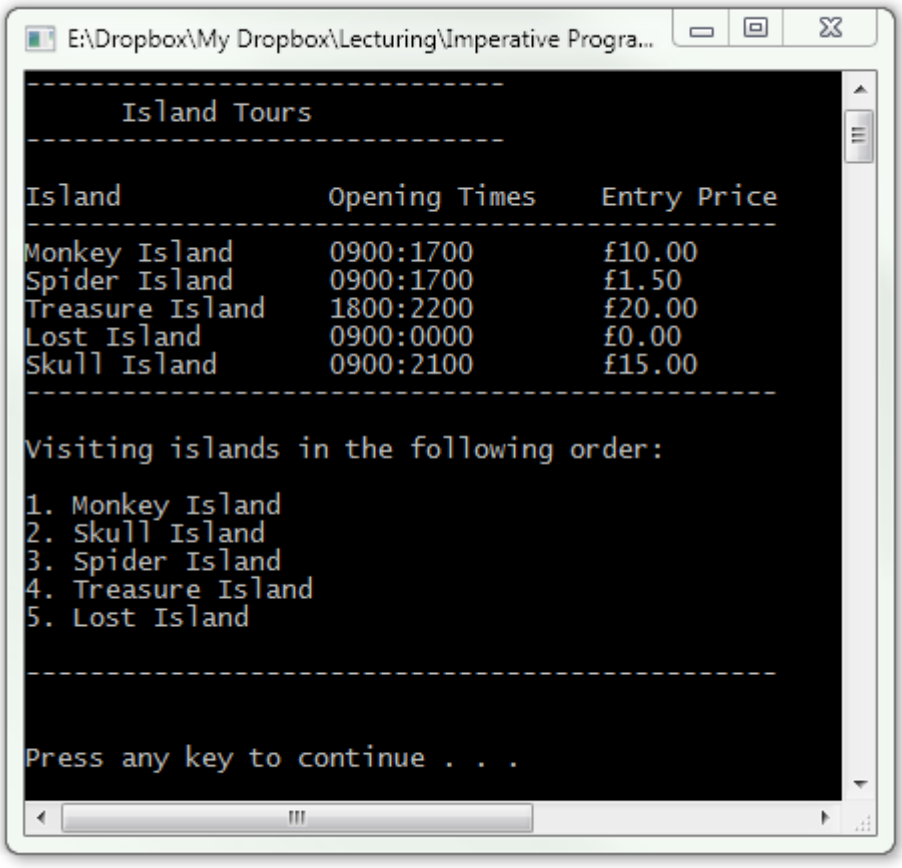
Dr. Llyr ap Cenydd

Exercise 1 - Island Tours

Your task for this exercise is to create a data structure that can hold information about several islands on a tour. For example the structure could hold the island's name, opening times and price. Your structure should also store a pointer to another island.

Once you have created your structure, connect them up as a single linked list, with each island holding a pointer to the next. This will define the order the islands will be visited.

For the final part of the program, use a pointer to loop through the linked list, starting at the first island. The code should iterate through the linked list until it reaches the end. Your output should resemble the following:



Hints

- Look over the lecture notes for example code
- (myStructPtr->next == NULL) will be false if myStructPtr->next is undefined.

Challenge - Island Tours database

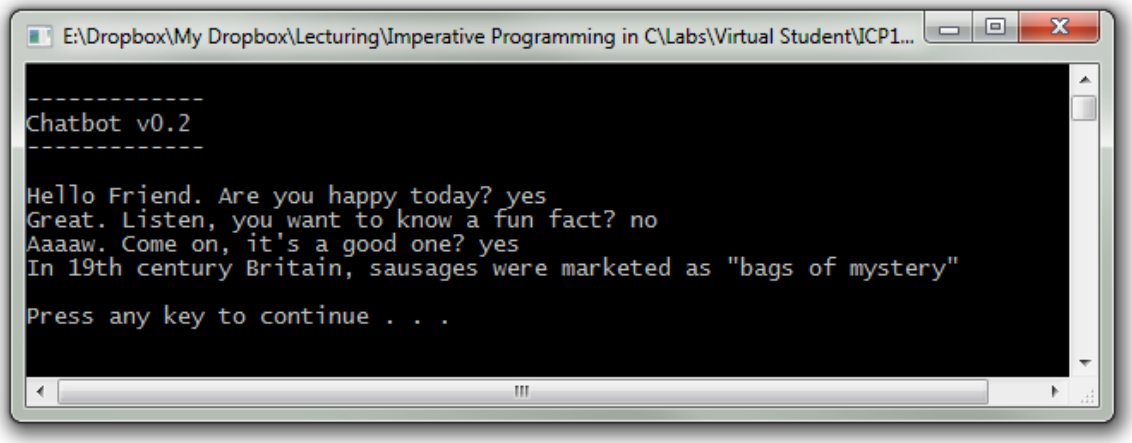
Extend your program from Exercise 1 so that the user can insert, remove and modify the order of islands in the linked list.

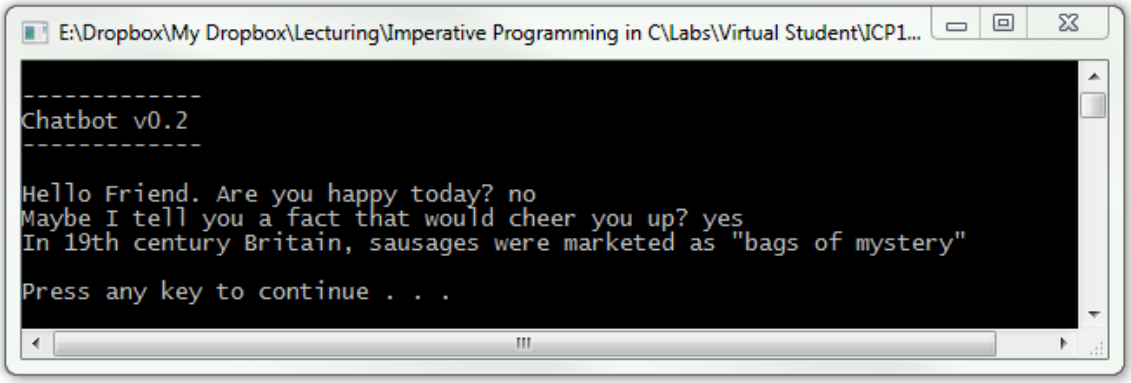
Exercise 2 -Chatbot v0.2

Recall that in lab 2 you were asked to create a primitive chatbot. Your task for this exercise is to create the next generation of primitive chatbots, this time using a binary decision tree.

Define a structure called Node that can store some text, and pointers to two other Nodes. Once you have done this design a series of yes/no conversations by linking together the Nodes.

When complete, your chatbot should be able to quiz the user similar to this:





Hints

- The lecture notes contain example code
- Remember that conversations don't have to be divergent. You can merge in and out like seen in the example above
- It might be worth defining a script / flow on paper so that it is easier to create the binary tree

Appendix

Code Snippets – Updated with example C code

Online C Programming Resources

Complete C Reference Library

C Programming IDE's

Dev-C++ (Windows)

Code::Blocks (Windows, Mac, Linux)

Visual Studio/C++ Express (Windows)

Netbeans C/C++ (Windows, Mac, Linux)

Codelite (Windows, Mac, Linux)