CENG 112 – DATA STRUCTURES
Homework 4

April 9, 2015

Due Date: 28 April 2015

Prog. Assignment 1.1 Recursive Selection Sort

Implement a recursive version of selection sort by modifying the selection sort implementation in "elementary_sorts/sort_selection.c".

Prog. Assignment 1.2 Insertion Sorting Linked Lists

Write a program that creates a doubly-linked list of twenty tables represented by the following C structure:

```
struct Table {
    int capacity;

    struct Table *next;
    struct Table *prev;
};
```

The capacity of each table should be a random number between 2 and 10. Write an insertion sort algorithm to sort the linked list of tables according to capacity (smaller first).

The program should

- create a list of twenty tables with random capacity,
- print the initial list of tables,
- sort them using the insertion sort you wrote,
- and then print the sorted list.

Prog. Assignment 1.3 qsort Practice

Write a program "registery.c" that reads (from stdin or a file) the names and student IDs of ten students into an array of the following C structure,

```
struct Student {
    char *name;
    int id;
};
```

Use the `qsort` function from the standard C library to sort and print the list of students twice:

- ordered by name,
- ordered by student id.