```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "emalloc.h"

#define MAX_NUMS 1000
#define MAX_LINE_LEN 50


/* Recall: if item represented by `a` comes before the
 * item represented by `b`, then a negative value is returned;
 * if `a` comes after `b`, then a positive value is returned;
 * otherwise 0 is return. Also: 1 and -1 are suitable negative
 * and positive values.
 */
int compare_two_doubles(const void *a, const void *b) {
    double *da = (double *)a;
    double *db = (double *)b;

    if (*da < *db) {
        return -1;
    } else if (*da > *db) {
        return 1;
    } else {
        return 0;
    }
}

int main(int argc, char *argv[]) {
    double *data;
    int     i;
    int     nums;
    double  temp;
    char    line[MAX_LINE_LEN];

    data = (double *)emalloc(MAX_NUMS * sizeof(double));

    nums = 0;
    while (fgets(line, MAX_LINE_LEN, stdin)) {
        temp = atof(line);
        data[nums] = temp;
        nums++;

        if (nums == MAX_NUMS) {
            break;
        }
    }

    printf("BEFORE qsort:\n------------\n");
    for (i = 0; i <nums; i++) {
        printf("%12.8f\n", data[i]);
    }

    printf("\n");
    qsort(data, nums, sizeof(double), compare_two_doubles);

    printf("AFTER qsort:\n------------\n");
    for (i = 0; i < nums; i++) {
        printf("%12.8f\n", data[i]);
    }

    free(data);

    exit(0);
}
```

```
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ ls
README.md  emalloc.c  emalloc.h  emalloc.o  generate_randoms.sh  makefile  randoms.txt  tester  tester.c  tester.o
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ chmod u+x ./generate_randoms.sh
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ chmod u+x ./tester
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ ./generate_randoms.sh
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ ./tester < randoms.txt
BEFORE qsort:
------------
  0.02095215
  0.34705381
  0.11848253
  0.00483705
  0.48612271
  0.37407468
  0.57520382
  0.91827767
  0.42409370
  0.45119392

AFTER qsort:
------------
  0.00483705
  0.02095215
  0.11848253
  0.34705381
  0.37407468
  0.42409370
  0.45119392
  0.48612271
  0.57520382
  0.91827767
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ ./generate_randoms.sh 15 42 | ./tester
BEFORE qsort:
------------
  0.24632033
  0.39614327
  0.95507482
  0.17134027
  0.59848588
  0.93803320
  0.96494759
  0.74934743
  0.09497370
  0.61873078
  0.18360869
  0.30454613
  0.88361906
  0.02002561
  0.16984527

AFTER qsort:
------------
  0.02002561
  0.09497370
  0.16984527
  0.17134027
  0.18360869
  0.24632033
  0.30454613
  0.39614327
  0.59848588
  0.61873078
  0.74934743
  0.88361906
  0.93803320
  0.95507482
  0.96494759
```

```
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ git add .
tanujd@TDLegion-Slim7i:~/seng265/labs/lab-07/08/E$ git commit -m "Lab 07 Submission"
[master 128a2b7] Lab07 Submission
 77 files changed, 2392 insertions(+), 78 deletions(-)
 create mode 100644 a3/emalloc.o
 create mode 100644 a3/list.o
 create mode 100755 a3/spf_analyzer
 create mode 100644 a3/spf_analyzer.o
 mode change 100644 => 100755 a3/tester
 mode change 100644 => 100755 a3/validator
 create mode 100644 labs/lab-07/07/.DS_Store
 create mode 100644 labs/lab-07/07/A/dynamic
 create mode 100644 labs/lab-07/07/A/dynamic.c
 create mode 100644 labs/lab-07/07/A/temp.txt
 create mode 100644 labs/lab-07/07/B-alt/README.md
 create mode 100644 labs/lab-07/07/B-alt/emalloc.c
 create mode 100644 labs/lab-07/07/B-alt/emalloc.h
 create mode 100644 labs/lab-07/07/B-alt/exprtester.c
 create mode 100644 labs/lab-07/07/B-alt/list.c
 create mode 100644 labs/lab-07/07/B-alt/list.h
 create mode 100644 labs/lab-07/07/B-alt/makefile
 create mode 100644 labs/lab-07/07/B/emalloc.c
 create mode 100644 labs/lab-07/07/B/emalloc.h
 create mode 100644 labs/lab-07/07/B/list.c
 create mode 100644 labs/lab-07/07/B/list.h
 create mode 100644 labs/lab-07/07/B/makefile
 create mode 100644 labs/lab-07/07/B/tester.c
 create mode 100644 labs/lab-07/07/C-alt/emalloc.c
 create mode 100644 labs/lab-07/07/C-alt/emalloc.h
 create mode 100644 labs/lab-07/07/C-alt/exprtester.c
 create mode 100644 labs/lab-07/07/C-alt/list.c
 create mode 100644 labs/lab-07/07/C-alt/list.h
 create mode 100644 labs/lab-07/07/C-alt/makefile
 create mode 100644 labs/lab-07/07/C/emalloc.c
 create mode 100644 labs/lab-07/07/C/emalloc.h
 create mode 100644 labs/lab-07/07/C/list.c
 create mode 100644 labs/lab-07/07/C/list.h
 create mode 100644 labs/lab-07/07/C/makefile
 create mode 100644 labs/lab-07/07/C/tester.c
 create mode 100644 labs/lab-07/07/D/emalloc.c
 create mode 100644 labs/lab-07/07/D/emalloc.h
 create mode 100644 labs/lab-07/07/D/list.c
 create mode 100644 labs/lab-07/07/D/list.h
 create mode 100644 labs/lab-07/07/D/makefile
 create mode 100644 labs/lab-07/07/D/q_expression.c
 create mode 100644 labs/lab-07/07/E/emalloc.c
 create mode 100644 labs/lab-07/07/E/emalloc.h
 create mode 100644 labs/lab-07/07/E/list.c
 create mode 100644 labs/lab-07/07/E/list.h
 create mode 100644 labs/lab-07/07/E/makefile
 create mode 100644 labs/lab-07/07/E/q_evaluate.c
 create mode 100644 labs/lab-07/08/A/emalloc.c
 create mode 100644 labs/lab-07/08/A/emalloc.h
 create mode 100644 labs/lab-07/08/A/list.c
 create mode 100644 labs/lab-07/08/A/list.h
 create mode 100644 labs/lab-07/08/A/makefile
 create mode 100644 labs/lab-07/08/A/tester.c
 create mode 100644 labs/lab-07/08/B/emalloc.c
 create mode 100644 labs/lab-07/08/B/emalloc.h
 create mode 100644 labs/lab-07/08/B/expected_output.txt
 create mode 100644 labs/lab-07/08/B/list.c
 create mode 100644 labs/lab-07/08/B/list.h
 create mode 100644 labs/lab-07/08/B/makefile
 create mode 100644 labs/lab-07/08/B/tester.c
 create mode 100644 labs/lab-07/08/C/makefile
 create mode 100644 labs/lab-07/08/C/tester.c
 create mode 100644 labs/lab-07/08/D/emalloc.c
 create mode 100644 labs/lab-07/08/D/emalloc.h
 create mode 100644 labs/lab-07/08/D/makefile
 create mode 100644 labs/lab-07/08/D/tester.c
 create mode 100644 labs/lab-07/08/E/README.md
 create mode 100644 labs/lab-07/08/E/emalloc.c
 create mode 100644 labs/lab-07/08/E/emalloc.h
 create mode 100644 labs/lab-07/08/E/emalloc.o
 create mode 100755 labs/lab-07/08/E/generate_randoms.sh
 create mode 100644 labs/lab-07/08/E/makefile
 create mode 100644 labs/lab-07/08/E/randoms.txt
 create mode 100755 labs/lab-07/08/E/tester
 create mode 100644 labs/lab-07/08/E/tester.c
 create mode 100644 labs/lab-07/08/E/tester.o
tanujd@TDLegion-Slim7i:~/seng265$ git push
```

```
   _____            _
  |  ___| _ __   __ _ (_) _ __   ___  ___ _ __ (_) _ __    __ _
  | |_   | '_ \ / _` || || '_ \ / _ \ / _ \| '__|| || '_ \  / _` |
  |  _|  | | | || (_| || || | | ||  __/|  __/| |   | || | | || (_| |
  |_____||_| |_| \__, ||_||_| |_| \___| \___||_|   |_||_| |_| \__, |
                 |___/                                        |___/
```

Use of this system must adhere to
'Policy IM7200: Responsible Use of Information Technology Services',
http://www.uvic.ca/universitysecretary/assets/docs/policies/IM7200_6030_.pdf

        AND

'Software Engineering Program Standards for Professional Behaviour',
http://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

        AND

'Use of the Engineering Computer Data Network Infrastructure',
http://www.uvic.ca/engineering/current/services/computing/index.php

```
Software Engineering Program Computer Support Group                sengsys@uvic.ca
tanujd@git.seng.uvic.ca's password:
Enumerating objects: 71, done.
Counting objects: 100% (71/71), done.
Delta compression using up to 20 threads
Compressing objects: 100% (66/66), done.
Writing objects: 100% (66/66), 48.44 KiB | 4.40 MiB/s, done.
Total 66 (delta 29), reused 0 (delta 0), pack-reused 0
To ssh://git.seng.uvic.ca/seng265/tanujd
   e4efd62..128a2b7  master -> master
```