CS 0411 Lab 9

In this lab, students will practics searching and sorting problems.

1. Last lab you created 100 random positive integers between 1 to 2000, and wrote down those integers into a file named `randat.dat`. This time, you need to write a program to sort these integers and rewrite the data in `randat.dat`.

2. Write a Fortran program which can be used to search a sorted data file and find the sought integer. Then use this program to search some integers between 1 to 2000 at your file `randat.dat`.

In above programs, you can use a module named `sort_search` which can be download at the course web (`sort_and_search.o, sort_search.mod`). Note that these are binary files so you cannot display them. But you can save them and use them in your program.

The interfaces of subroutines in the module are as follows:

```
recursive subroutine quicksort(item,first,last)
integer,dimension(:),intent(inout)::item
integer,intent(in)::first,last
end subroutine quicksort

subroutine split(item,low,high,mid)
integer,dimension(:),intent(inout)::item
integer,intent(in)::low,high
integer,intent(out)::mid
end subroutine split

subroutine binarysearch(x,sought,found,location)
integer,dimension(:),intent(in)::x
logical,intent(out)::found
integer,intent(out)::location
integer,intent(in)::sought
end subroutine binarysearch
```