Week-12 Tutorial Exercises

1. How are you progressing with the assignment-2?
   Do you have any questions?
   Do you properly understand

   - how the provided testing files `stage1.c` and `stage2.c` test a given `Game.c` ?
   - how can a player find out what to do?
     What specific informaion from the game's current state (functions from `Game.h`) are useful to decide a next move?

2. Consider:

```
char s[] = "Hello World!";
char *cp = s;
char *cp2 = &s[8];
```

   What is the output when the following statements are executed?

```
printf("%s\n", cp);
printf("%c\n", *cp);
printf("%c\n", cp[6]);
printf("%s\n",cp2);
printf("%c\n",*cp2);
```

3. Write a function

```
int non_decreasing(int n, int a[n])
```

   which checks whether items in an array are sorted in non-decreasing order. (i.e. **a[i] ≥ a[i-1]**, for **0<i<N**). Your function should returns **1** if the items are in non-decreasing order, **0** otherwise.

4. **Multiple Linked Lists**

   We've seen how to deal with one linked list, what about more?

   - How might I append one List to another?

   - How might I prepend one List to another?

   - How might I interleave, or 'zip' values from two lists?

     That is, given two lists
     $l_1 := 5 \to 3 \to 1 \to \varnothing$ and
     $l_2 := 2 \to 4 \to 6 \to \varnothing$,
     the result would be
     $l := 5 \to 2 \to 3 \to 4 \to 1 \to 6 \to \varnothing$.

5. **Simple Recursion**
   In the slectures, we've seen the basics of programming recursively: we define a function that has a *base case*, and a *recursive case*.

   - What is a base case? What does a base case define?

   - What is a recursive case?

   - Why do we need base cases?

   You need to implement two functions using recursion in your lab (Exercises 01 and 02). You should get started on them and discuss any questions you may have.

6. **A simple player for Assignment-2**
   You need to implement a simple player (for Assignment-2) in your lab . You should get started on that exercise (Exercises 03) and discuss related questions, if any.

Revision question

- We have student fines in a file named **fines.txt** this format:

```
Linus Torvalds fined $98 for not attending lectures.
Denis Ritchie fined $50 for eating in labs.
Ken Thompson fined $150 for attending lecture in his underpants.
```

Write a program `student_fine.c` which reads this file and prints the student with biggest fine including the amount and reason in this format.

```
$ a.out
Biggest fine was $150 given to Ken Thompson for 'attending lecture in
 his underpants'.
```

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