ESc101N: Fundamentals of computing(Lab Session 9)

October 19, 2009

Instructions

1. Please read the question carefully and write the program accordingly

2. Make sure that the TA has graded you program

3. The marks are distributed as follows. You get 60% of the marks if the basic algorithm is current, 20% if you manage to compile and execute and 20% for writing the code cleanly, i.e. using proper variable names, intending and making the code more readable.

Question 1. Recall the definition of lists that we studied in the class.

```
typedef struct Cons Cons;
typedef Cons * List;
struct Cons {
  int datum;
  List next;
};
```

Write a set of library functions for the following operations on lists.

(a) (5 marks) Functions `List readList()` and `void printList(List)` to read and write lists. As a hint for `readList` recall that the function `scanf` has type `int scanf(char *fmt,...)` where the return type is the number of variables that are read successfully. For example if you have `scanf("%d", &x)` and a non integral value is entered or you pressed `Control-D` then `scanf` returns 0. If you gave a valid integer as input then scanf will return 1.

(b) (5 marks) The function `int sum(List)` which sums up the elements of a list.

Sample output is given below

```
Script started on Mon 19 Oct 2009 13:24:04 IST
$ ./a.out
enter the list and terminate it with Control-D:
34
35
1
2
4
the sum of the list [34,35,1,2,4]is 76
$
Script done on Mon 19 Oct 2009 13:24:14 IST
```