

**This self-assessment quiz consists of short answer questions totaling 10 marks.**

1. [1 marks] Give the regular expression that you would use with `grep` to find all lines a file that contain the subsequence 3136. E.g. “csci3principles1of3programming3languages” has the subsequence 3136.

2. [4 marks] Consider the following C struct representing the a node of a singly linked list:

```
struct node {  
    struct node *next;  
    /* other stuff here */  
}
```

Suppose that `head` is a global variable of type `struct node *`, pointing to the head of the linked list. **Write a function in C called `reverse()` that reverses the nodes in the linked list.**

3. [5 marks] Prove using induction that  $\sum_{i=0}^n 2^i = 2^{n+1} - 1$ .