1. Define the relation `mergesort(L1,L2,L3)` where L1 and L2 are two unsorted lists and L3 is the sorted list. You may define some relations as necessary to support `mergesort` relation. For example, a question may be as follow:

```
?- mergesort([3,1,8,7,5],[4,6,9,2],L).
```

Answer as

```
L = [1,2,3,4,5,6,7,8,9];
no.
```

2. Three missionaries and three cannibals must cross a river, but the only available boat will hold only two people at a time. There is no bridge, the river cannot be swum, and the boat cannot cross the river without someone in it. The cannibals will eat any missionaries they outnumber on either side of the bank. Write a Prolog program to get everyone across the river with all of the missionaries uneaten. (You need to explain your algorithm with comments for all defined predicates, example question, and its expected solution).

Name your programs as “assign3_1.P”, and “assign3_2.P” appropriately and submit to appropriate ITEC480 directory. Write complete comments and describe your sample goal statement.