1. Write a basic python program which asks the user for a number and, using the `math` package, calculates the natural log of that number, printing it to the screen. Do not worry about ill-formed input (i.e., non-numbers) or pretty output. Also, remember that python will give you a string as input, but you need to use it as a number (i.e., a `float`).

2. (a) Write a program that takes the following list, asks the user from which position elements should be deleted, reads in the number, and deletes 5 elements from that position on. As a final step, the program should print the modified list. Make sure that the program does not crash if there are fewer than 5 elements left.

   ```python
   months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']
   ```

   (b) Extend the program so that the list has the number of days inserted after each month (the number of each month should be hardcoded). And instead of deleting 5 months, the program retrieves those months and their days from the list and prints sentences like "March has 31 days." This time, the number a user indicates is the number of the month. For example, make sure that if the user types in 2, he/she will get February as the month.

3. **Mystery**: I know you haven’t really learned conditionals yet (if, elif, else), but I want you to figure out what the following program does.

   ```python
   numbers = [1, 3, 5, 7, 11, 13, 17, 19]
   numbers.sort()
   nn = int(input('new number: '))
   if nn in numbers:
       print('tough luck')
   elif nn > 20:
       numbers.append(nn)
       print('attached')
   else:
       numbers.insert(0, nn)
       print('first!')
   ```