File Format

The first item in the file will be the size of the shape container, which cannot change despite how many adds are in the file. Following that will be lines containing one of the three following commands in any order:

1. ADD <index> <shape code> <shape data>
   - <index> is the index in the container to put the shape
   - <shape code> will be CIR, TRI, or REC for Circle, Triangle, and Rectangle respectively
   - <shape data> will the be radius, base and height, or length and width, of a Circle, Triangle, or Rectangle respectively
2. DELETE <index>
   - Deletes the shape at a given index
   - The index may be out of range or not yet set, in which case you **must catch and handle the exception** to gracefully recover and continue on
3. PRINT <index>
   - Prints the name and area of the shape at a given index, as shown below
   - The index may be out of range or not yet set, in which case you **must catch and handle the exception** to gracefully recover and continue on
4. EXIT
   - Ends the program

```
5
ADD 0 CIR 5.5
ADD 1 TRI 2.5 6.6
PRINT 0
ADD 2 REC 10.5 20.25
PRINT 99
PRINT 2
EXIT
```

Sample run:

```
Shape at index 0: Circle area = 95.0331
Shape at index 99: Does not exist
Shape at index 2: Rectangle area = 212.625
Exiting...
```

We will test your code with larger, more complex files. But, all files will be properly formatted.