

Lab assignment 7

- Write a program called `argStats` that accepts integer values as command line arguments. The program should print the number of arguments, their sum, mean and variance as output in a single line. For example,

```
$ argStats 2 4 5 8 9 3
```

will output the line

```
numArgs = 6; sum = 31; mean = 5.166; var = 7.766
```

The program should print an appropriate error message if the arguments are not as expected.

- Modify the above program as `argStatsFormat` which accepts a flag as the first argument to format the output. The flag `-n` prints each statistic in a newline and `-t` prints the statistics as a 4-tuple. For example,

```
$ argStatsFormat -n 2 4 5 8 9 3
```

will output

```
numArgs = 6
```

```
sum = 31
```

```
mean = 5.166
```

```
var = 7.766
```

And

```
$ argStatsFormat -t 2 4 5 8 9 3
```

will output

```
(6,31,5.166,7.766)
```

The program should print an appropriate error message if the arguments are not as expected. The program should print the default style if the flags `-t` and `-n` are not supplied.

- Develop a tracking system for examination scores. The system should keep track of the following details for each student:
 - name (string)
 - roll-number (alphanumeric)
 - % marks in physics (floating point)
 - % marks in mathematics (floating point)
 - % marks in biology (floating point)

Accept the above details for N students (N is to be provided by the user.) From the N records, compute the following statistics:

- Print the roll number and name of the student with the highest average score.
- Print the names of students who have scored more than the average score.
- Determine how many students have scored more than 70% in biology.
- What is the mean and variance of scores in physics?

- Modify the above program to have an additional field called grade (floating point.) After accepting the N inputs, compute the grade as given below and display all the records, including the grade.
 - average score ≥ 90 : grade A+
 - $80 \leq$ average score < 90 : grade A
 - $70 \leq$ average score < 80 : grade B
 - $60 \leq$ average score < 70 : grade C
 - $50 \leq$ average score < 60 : grade D
 - $40 \leq$ average score < 50 : grade E
 - average score < 40 : grade F