CANDIDATE NAME: _____   Date:_____

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Please review the following questions and *Provide All Requested Items of information for each question.*

We understand that this may be a difficult evaluation test and take some time to complete.
We ask you provide answers to **all** questions. If you are struggling, complete as much as possible for the question.
It is imperative we understand your ability and we will review them with you at your in-person interview.

We at Armedia are looking for exceptional talent with folks that take pride in their work and
strive to go above and beyond to reach the next level of excellence; as they will have the opportunity to
work with some of the finest minds in this industry on cutting edge technology.

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Problem Statement:

We have a process where we receive data in a file which are required to process manually. We would like to automate this through the use of a program that will automatically read the data and process it, and then display the results to us in a report.

The format of the input file and the sample data to use is shown below. Please Copy this into a file which you can read from. These must not be imbedded in your program.

```
11
*2 2
2 3
4 5
*2 2
3 11
11 3
*4 2
4 4
5 5
6 6
55 99
*3 3
3 5 a
4 7 a
3 4 b
*3 2
3 3
4 5 c a
3 5 b
*3 3
4 2 d
3 4 a
3 3 b
*3 3
4 2 a
3 3 a
4
*4 2
2 2
3 3
4 4
*2 3
-1 -2 a
-3  -3  b
*4 2
0 0
1 -1
-1 1
1111111 222222
```

The data is structured as follows.

- The first record in the file will indicate the number of data groups to process. In the example, there should be 11 data groups.
- The number of records within each data group can vary as described below
  - The first record of the data group must contain two items that identify the data records to follow – this can be considered the control record – the items in this record have the following format and are separated by spaces
    - The first character of the control record must be a '*'
    - The first number indicates the number of data records in the data group
    - The second number indicates the number of elements in each record within the data group
    - Any anomaly here – please reject the record only and print an error message for that record
  - The next set of records will be the actual data that needs to be processed and will contain any number of elements separated by spaces. You only need to use the applicable values.
  - Extraneous data on the record line can be ignored for this exercise
  - Blank lines should not be processed and can be skipped
  - Example of good records:

    *1 2 ➔ Control Record – 1 data record in this group and each data record should have 2 elements
    2 2 ➔ Data record for this group – 2 elements present

    *2 3 ➔ Control Record – 2 data records in this group and each data record should have 3 elements
    3 3 a ➔ Data record 1 in this group – 3 elements present
    4 4 b ➔ Data record 2 in this group – 3 elements present

  - Example of bad records:

    *1 2 ➔ Control Record – 1 data record in this group and each data record should have 2 elements
    3   ➔ Data record for this group – element missing

    *2 3 ➔ Control Record – 2 data records in this group and each data record should have 3 elements
    3 3 ➔ Data record 1 in this group – element missing
    4 c b ➔ Data record 2 in this group – alpha value in numeric position

For this Exercise – please develop a module which will process all the data in the file for only the records with three (3) elements as follows:

- Calculate the results of the following formula and display with the following label "FORM 33 = "

  Result = pi * (first value) + psi * (second value)^3 + (zeta $^{(lookup\ using\ the\ following\ mapping)}$) / (second value)

    Translations to use in equation:
    a   ➔ 3.1
    b   ➔ 4.1
    c   ➔ 6

- If a translation is not found, then use 'a' as the default.
- The results must be displayed to 3 significant digits – nnnn.000
- Display the total number of records reads – including control records
  - Bonus – display summary of records by data groups
- Ignore any Data Groups which have two element data records

The constants pi, psi, and zeta are defined as follows:

    Pi = 3.14
    Psi = 6.48485
    Zeta = 3.2

You are more than welcome to add additional data to validate other error and test conditions.

You may use any language you want to use.

You may provide a Flow Chart of your program design.