

# INTRODUCTION TO COMPUTATIONAL PHYSICS

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## ADDITIONAL EXERCISES

Consolidation Week TB1 –Academic Session 2020–2021

1. Write a program asking for a positive integer **n** and returning a triangle of height **n** such as the one below,

```

          1
        -2  4  -8
      16 -32  64 -128 256
    .· · · · · ·
  *  *  *  ...  ...  ...  ...  *
```

2. Write a program echoing onscreen everything written by the user – until the user is fed up with the passive-aggressive act and decides to write **Exit**.
3. Write a program asking the user for a sentence and a character, then returning the number of times the character appears in the sentence.
4. Write a program storing a password, then asking the user for said password until they write it correctly.
5. Write a program asking the user for a word, then showing each of the characters of the word onscreen in reverse order.
6. Write a function converting any decimal point to binary form. Write its inverse function, i.e. a function converting binary to decimal.
7. Write a program receiving a string and returning a double list

```
[[ character 1 , frequency 1 ],
 [ character 2 , frequency 2 ],
   :         :         :
 [ character n , frequency n ]]
```

collating each character against the frequency with which it occurs in the string.