

(A) An **armstrong number** is a n -digits number that is equal to the sum of the n^{th} power of its digits.

Examples :

$$6 = 6^1 = 6 \quad (n=1 \text{ is the number of digits in } 6)$$

$$371 = 3^3 + 7^3 + 1^3 = 371 \quad (n=3 \text{ is the number of digits in } 371)$$

(B) A number is **magical number** if repeated adding of its digit gives 1.

Examples:

19 is magical, since $1 + 9 = 10$, $1 + 0 = 1$ hence magical.

991 is magical, since $9 + 9 + 1 = 19$, $1 + 9 = 10$, $1 + 0 = 1$.

However 274 is not, $2 + 7 + 4 = 13$, $1 + 3 = 4$.

Write a program which reads from a textfile, "**numbers.txt**", a list of positive integers that ends with a sentinel **-1**. The program should examine if the number is an **armstrong, magical, or neither**.

Use a textfile "**outfile.txt**" to print out your results.

In (A) use a function **is_armstrong** which receives a positive integer n and returns 1 if n is an armstrong number or 0 otherwise.

In (B) use a function **is_magical** which receives a positive integer n and returns 1 if n is a magical number or 0 otherwise.

Notes:

- Submit your assignment through Ritaj webpage by replying to message **142-Ass2**.
- No assignment will be accepted through a regular message on Ritaj webpage, or by an Email.