

Problem Set 4

Problem - 4.1

Write a Python function `revLst(l)` that reverses the list `l` (no new list is created).

Write a Python program that reads a list, reverses it using `revLst(l)` and prints it.

Input: `[1,2.5,(1,2),[1,2], "kgp"]`

Output: `['kgp', [1,2], (1,2), 2.5,1]`

Problem - 4.2

Write a Python function `revStr(s)` that returns the reverse of string `s` without using any library function.

Write a Python program that reads a string `s` and prints the concatenation of `s` and its reverse (even palindrome). It uses the function `revStr(s)` to reverse `s`.

Input: Kharagpur

Output: KharagpurrupgarahK

Problem - 4.3

Write a Python function `subStr(t,p)` that takes two parameter strings `t` (text) and `p` (pattern). If `p` is a substring of `t`, then it returns the starting index of `p` in `t`. Otherwise it returns `-1`.

Write a Python program that reads a `text` and a `pattern` and uses the function to find whether the `pattern` is a substring in the `text`.

Input: text: IIT Kharagpur, pattern: rag

Output: 7

Problem - 4.4

Write a Python program that reads a positive integer $n > 1$ and prints all integers in the range $1 \cdots n$ that has three factors including 1 and itself. As an example 49 has three factors 1, 7, 49, but 36 has 9 factors 1, 2, 3, 4, 6, 9, 12, 18, 36.

Input: 100

Output: 4, 9, 25, 49

Problem 4.5

Two positive integers k and $k + 2$ are called *twine primes* if both of them are prime.

$(3, 5)$, $(5, 7)$, $(41, 43)$ etc. are twine prime pairs.

Write a Python program that reads a positive integer $n > 1$ and prints all pairs of *twine-primes* in the range $1 \cdots n$.

Input: 20

Output: $(3,5)$, $(5,7)$, $(11,13)$, $(17, 19)$