Python – CAS

Purpose

This lab was designed to teach you how to use loops in python.

Description

A CAS Registry Number is a unique numerical identifier assigned by the Chemical Abstracts Service (CAS) to every chemical substance described in the open scientific literature (currently including all substances described from 1957 through the present, plus some substances from as far back as the early 1800s), including organic and inorganic compounds, minerals, isotopes, alloys, mixtures, and nonstructurable materials.

The registry number is separated into three parts, the first consisting from two up to seven digits, the second consisting of two digits, and the third consisting of a single digit serving as a check digit.

The check digit is found by taking the last digit times 1, the preceding digit times 2, the preceding digit times 3 etc., adding all these up and computing the sum modulo 10. For example, the CAS number of water is 7732-18-5: the checksum 5 is calculated as (8×1 + 1×2 + 2×3 + 3×4 + 7×5 + 7×6) = 105; 105 mod 10 = 5.

Write a check_sum function that verifies that a CAS number is valid. Call the function passing the CAS number as a string.

Program Shell

Create a file called cas.py

Sample Execution

```
water, 7732-18-5: valid
sodium chloride 7647-14-5: valid
sucrose 57-50-1: valid
baking soda 144-55-8: valid

// loop up and check some others
```