Using %mprun: Hero BMI

You'd like to calculate the body mass index (BMI) for a selected sample of heroes. BMI can be calculated using the below formula:

$$\text{BMI} = \frac{\text{mass}_{\text{kg}}}{\text{height}_{\text{m}}^2}$$

A random sample of 25,000 superheroes has been loaded into your session as an array called `sample_indices`. This sample is a list of *indices* that corresponds to each superhero's index selected from the `heroes` list.

A function named `calc_bmi_lists` has also been created and saved to a file titled `bmi_lists.py`. For convenience, it is displayed below:

```
def calc_bmi_lists(sample_indices, hts, wts):

    # Gather sample heights and weights as lists
    s_hts = [hts[i] for i in sample_indices]
    s_wts = [wts[i] for i in sample_indices]

    # Convert heights from cm to m and square with list comprehension
    s_hts_m_sqr = [(ht / 100) ** 2 for ht in s_hts]

    # Calculate BMIs as a list with list comprehension
    bmis = [s_wts[i] / s_hts_m_sqr[i] for i in range(len(sample_indices))]

    return bmis
```

Notice that this function performs all necessary calculations using **list comprehension** (hence the name `calc_bmi_lists()`). Dig deeper into this function and analyze the memory footprint for performing your calculations using **lists**:

- Load the `memory_profiler` package into your IPython session.
- Import `calc_bmi_lists` from `bmi_lists`.
- Once you've completed the above steps, use `%mprun` to profile the `calc_bmi_lists()` function acting on your superheroes data. The `hts` array and `wts` array have already been loaded into your session.

After you've finished coding, answer the following question:

How much memory do the list comprehension lines of code consume in the `calc_bmi_lists()` function? (i.e., what is the total sum of the `Increment` column for these four lines of code?)

Instructions

Possible Answers

- 20.0 MiB - 30.0 MiB
- 0.1 MiB - 2.0 MiB
- 10.0 MiB - 15.0 MiB
- 0.0 MiB

Answer : 0.1 MiB - 2.0 MiB