Home

Tartalomjegyzék

Exercise

range

Write an iterable class like **range**, but without returning a whole list, but storing only the actual element.

```
class Range:
     def __init__( ... ):
         ...
     def __iter__( ... ):
         ...
     def __next__( ... ):
         ...
```

- Its constructor should have one parameter: a number or a string. The iteration should go up that number, from 0 with 1 steps.
- If the number is not positive, then the iteration should take 0 steps.
- If you get a string then try to convert it to a number. If it cannot be converted, then raise a **ValueError** exception.
  - If it is a valid integer, then calculate with that.
- If you get the string **"http://wiki.math.bme.huinf"http://wiki.math.bme.hu** then make the iteration go endless (infinite loop)!

Shapes

Write a class called **Shape**.

- Let it have two members: **x** and **y**, the coordinates of the shape on the plane (center of mass).
- Define a **move** method, with one parameter **v**: a list of length 2, a vector to translate the shape with. After this method the coordinates should be changed.

Define the following classes as children of **Shape**:

- **Ellipse** with additional parameters (except the *(x, y)* coordinates): **a** and **b** the *x* and *y* axes radii
- **Rectangle** with additional parameters (except the *(x, y)* coordinates) **a** and **b** the length of the sides

Write an **area** method for both, which calculates the area!

Define an **equation** method for printing the equation of the **Ellipse**! Something like:

```
((x-1)/2)^2 + ((y-2)/3)^2 = 1
```

Palindrome

Write a function, called Palindrome, with one parameter which is a string. The function should check whether the string is a palindrome or not. The function should return "http://wiki.math.bme.huTrue"http://wiki.math.bme.hu if the string is a palindrome, otherwise It returns "http://wiki.math.bme.huFalse"http://wiki.math.bme.hu.

Mersenne Prime

Write a function, called Mersenne, with one parameter which is an integer. The function should check whether the number is a Mersenne Prime or not. The function should return "http://wiki.math.bme.huTrue"http://wiki.math.bme.hu if the number is a Mersenne prime number, otherwise It returns "http://wiki.math.bme.huFalse"http://wiki.math.bme.hu.

Average

Use variadic function strategy to write a function average which gives the average of all numbers from the parameters. For example:

```
average(2, 3, 4) --> 3
average(2, 3, 4, 5, 6) --> 4
average(2, 3, 4, 5, 6, ...)
```

Union Sets

Use variadic function strategy to write a function which gives the union of any number of sets. For example:

```
union({1, 2, 3 }, {2, 3, 4}, {3, 4, 5}) --> {1, 2, 3, 4, 5}
```

Hint: use .update() method to add a new element to a set.