Intro to Python

Exercise : Imhotep Part 1

Assignment

Download, unpack, and complete as many tasks as possible from the TODO.txt file’s list.

Imhotep

In the game of Imhotep, the player tries to build a step pyramid for the Pharaoh Zoser. He is given resources, like land to plant grain, people and workers, storehouses of grain, etc. The player tries to keep people and workers from starving, by planting grain and assigning grain to use as food, assign enough people as workers to complete levels of the pyramid, etc. The player is trying to complete 20 levels of the pyramid in 12 years or less.

As the game proceeds, some random events occur that help or hinder the player’s efforts. For example, the Pharaoh may conquer neighboring lands to allow more grain to be planted, some levels of the pyramid may collapse, or barbarians may raid and kill some people.

In this exercise, you will practice Python programming with function definitions, arithmetic, and printing text to the console.

The functions you create will control the random events that help and hinder Imhotep in his efforts.

A function usually has this structure:

```python
def function_name(input_parameter1, input_parameter2):
    output_value = input_parameter1 + input_parameter2
    return output_value
```

The function_name is chosen by the programmer. The list of input parameters can have any number of parameters, and can have any name the programmer chooses. The calculation in the function can also be whatever the programmer chooses.

Arithmetic calculations can use any of the basic math operations you are familiar with. For example we could use $4 + 5$, $4 - 5$, $4 \times 5$ and $4 / 5$, to do addition, subtraction, multiplication and division.

We can print text to the console using the print command. For example, this prints a friendly message to the console:

```python
print "Hello!"
```

Random numbers can be created using the random module. This is an example of creating a random number from 1 to 6, inclusive.

```python
x = random.randint(1, 6)
```

Tasks

For this exercise we need to create the following functions:

**military_land_gain:**

```python
def military_land_gain(current_tels):
    This function chooses a random number from 1 to 50 and adds it to current_tels. It displays a message. Then it returns current_tels.
```

Example message:

```python
A military campaign led by Zoser has brought an additional 39 tels of land into the double-kingdom.
```
merchant_grain_gain:

```python
def merchant_grain_gain(current_storehouses):
    This function chooses a random number from 20 to 70 and adds it to the current number of storehouses. It displays a message. Then it returns current_storehouses.
```

Example message:

```
Minoan merchants have brought 41 storehouses of grain to trade for methods of building as practiced in Khemi.
```

bride_grain_gain:

```python
def bride_grain_gain(current_storehouses):
    This function chooses a random number from 1 to 100 and adds it to the current number of storehouses. It displays a message. Then it returns current_storehouses.
```

Example message:

```
The Pharaoh's new Syrian bride brought a dowry of 97 storehouses of grain.
```

tribute_grain_gain:

```python
def tribute_grain_gain(current_storehouses):
    This function chooses a random number from 1 to 50 and adds it to the current number of storehouses. It displays a message. Then it returns current_storehouses.
```

Example message:

```
Nubian emissaries have brought tribute of 46 storehouses of grain.
```

worker_escape_loss:

```python
def worker_escape_loss(current_workers):
    This function chooses a random number from 1 to current_workers and subtracts it from the current number of workers. It displays a message. Then it returns current_workers.
```

Example message:

```
A fanatical rebel-priest has escaped with 436 workers into the wilderness of the Sinai.
```

worker_rebellion_loss:

```python
def worker_rebellion_loss(current_workers):
    This function chooses a random number from 1 to 100 and subtracts it from the current number of workers. It displays a message. Then it returns current_workers.
```

Example message:

```
The work force has rebelled. 59 workers were killed by Pharaoh's victorious Anubis Squadron.
```

worker_collapse_loss:
```python
def worker_collapse_loss(current_workers):
    This function subtracts one fourth of the current
    workers from current_workers. It displays a message.
    Then it returns current_workers.

Example message:

One fourth of the work force was lost.

levels_collapse_loss:

def levels_collapse_loss(current_levels):
    This function chooses a random number from 2 to 4
    and subtracts it from the current number of levels.
    It displays a message. Then it returns current_workers.

Example message:

2 levels of the pyramid collapsed.

population_pestilence_loss:

def population_pestilence_loss(current_population):
    This function chooses a random number from 1 to 1/2 of
    the population and subtracts it from the current
    population. It displays a message. Then it returns
    current_population.

Example message:

A pestilence descended from Amen-Re. 42917
people died.

population_attack_loss:

def population_attack_loss(current_population):
    This function chooses a random number from 1 to the
    current population size and subtracts it from the current
    population. It displays a message. Then it returns
    current_population.

Example message:

Hyksos with chariots and blades of black
evil metal have attacked Khem. 39456 people
have been killed.

population_raid_loss:

def population_raid_loss(current_population):
    This function chooses a random number from 1 to the
    current population size and subtracts it from the current
    population. It displays a message. Then it returns
    current_population.

Example message:

Achean barbarians from the northern sea
have raided the delta. 14285 people have been
killed.
```

The test_random_events() function is used to test your functions.

Download

- Imhotep Part1