

Tuple, mape i crtanje u Python-u

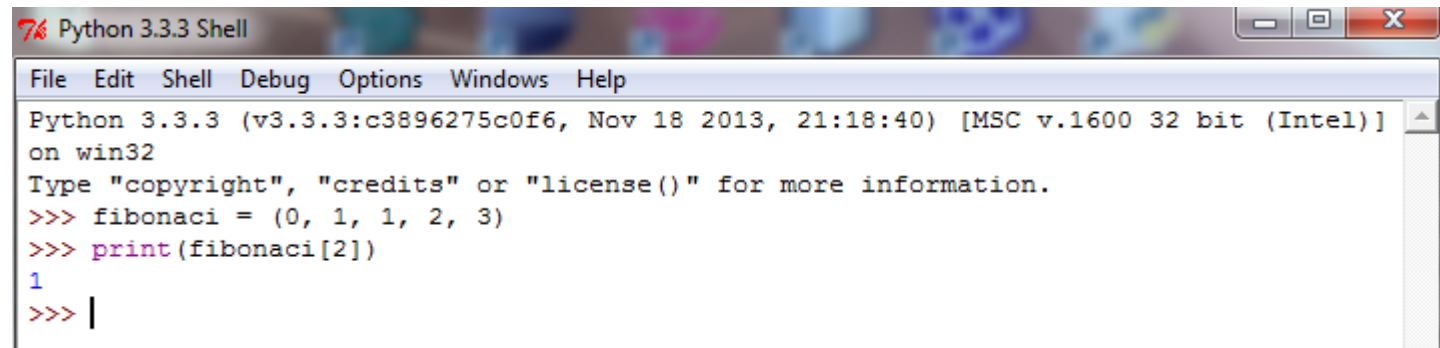


Tuple

- Tuple je sličan listi.
- Razlika između tuple-a i liste je u tome što nakon kreiranja tuple-a, njega više ne možemo menjati. Ne možemo dodavati, brisati ili menjati elemente u tuple-u.
- Ovo je korisno zbog toga što nam nekada baš trebaju neke promenljive čije vrednosti ne želimo da menjamo.

Tuple

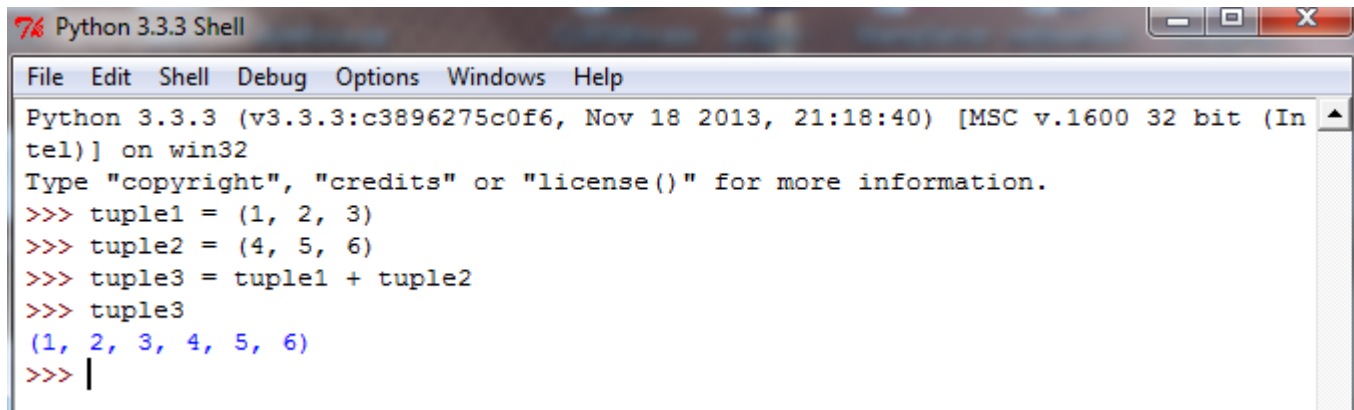
- Kreiranje tuple-a je slicno kao kreiranje liste, razlika je u tome što umesto [] zagrada koristimo () zagrada.
- Kod uzimanja vrednosti sa određenim indeksom i dalje koristimo [] zagrada.



```
Python 3.3.3 Shell
File Edit Shell Debug Options Windows Help
Python 3.3.3 (v3.3.3:c3896275c0f6, Nov 18 2013, 21:18:40) [MSC v.1600 32 bit (Intel)]
on win32
Type "copyright", "credits" or "license()" for more information.
>>> fibonacci = (0, 1, 1, 2, 3)
>>> print(fibonacci[2])
1
>>> |
```

Tuple

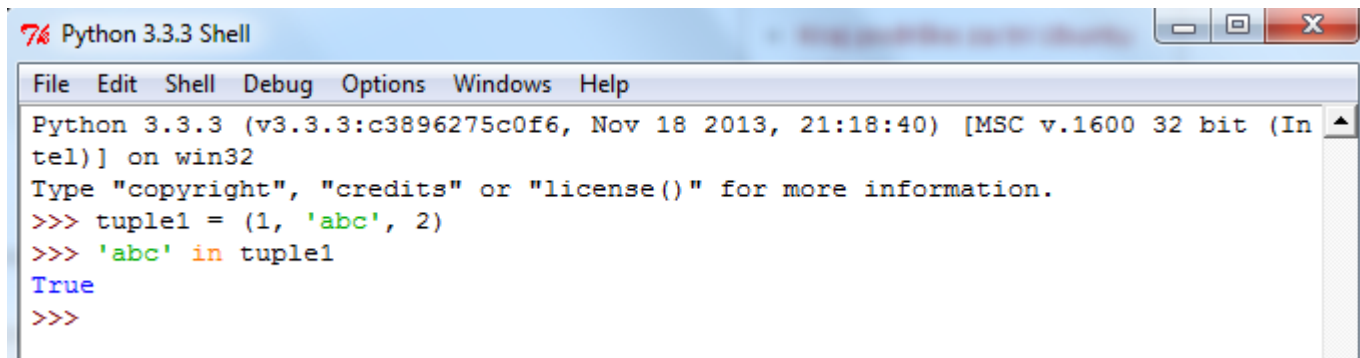
- Za kreiranje jednog tuple-a možemo koristiti druge tuple-ove.



```
Python 3.3.3 Shell
File Edit Shell Debug Options Windows Help
Python 3.3.3 (v3.3.3:c3896275c0f6, Nov 18 2013, 21:18:40) [MSC v.1600 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> tuple1 = (1, 2, 3)
>>> tuple2 = (4, 5, 6)
>>> tuple3 = tuple1 + tuple2
>>> tuple3
(1, 2, 3, 4, 5, 6)
>>> |
```

Tuple

- Još jedna korisna stvar kod tuple-a je ispitivanje da li tuple sadrži određeni element korišćenjem komande **in**.



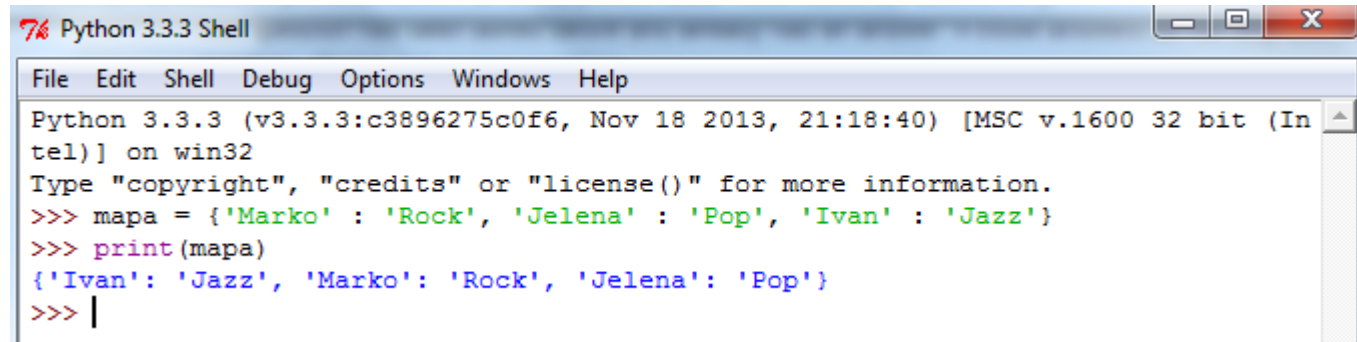
```
Python 3.3.3 Shell
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Python 3.3.3 (v3.3.3:c3896275c0f6, Nov 18 2013, 21:18:40) [MSC v.1600 32 bit (In
tel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> tuple1 = (1, 'abc', 2)
>>> 'abc' in tuple1
True
>>>
```

Mape

- Mapa predstavlja malo složeniji oblik liste.
- Mapu koristimo umesto liste kada nam jedan element nema samo jedan podatak već dva.
- Ovo je omogućeno u mapama preko ključeva i njihovih odgovarajućih vrednosti.
- Unos u mapu je oblika ključ : vrednost

Mape

- Primer: Za svaku osobu pored imena potrebno je zapamtiti i koju vrstu muzike voli da sluša.



```
Python 3.3.3 Shell
File Edit Shell Debug Options Windows Help
Python 3.3.3 (v3.3.3:c3896275c0f6, Nov 18 2013, 21:18:40) [MSC v.1600 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> mapa = {'Marko' : 'Rock', 'Jelena' : 'Pop', 'Ivan' : 'Jazz'}
>>> print(mapa)
{'Ivan': 'Jazz', 'Marko': 'Rock', 'Jelena': 'Pop'}
>>> |
```

Crtanje

- Da bismo mogli da crtamo u Python-u, potreban nam je alat koji se zove turtle. Njega koristimo tako što ga uključimo u naš program – `import turtle`. Sledeća komanda koja nam je potrebna je `turtle.Pen()` i nju je potrebno dodeliti nekoj promenljivoj (`t = turtle.Pen()`).

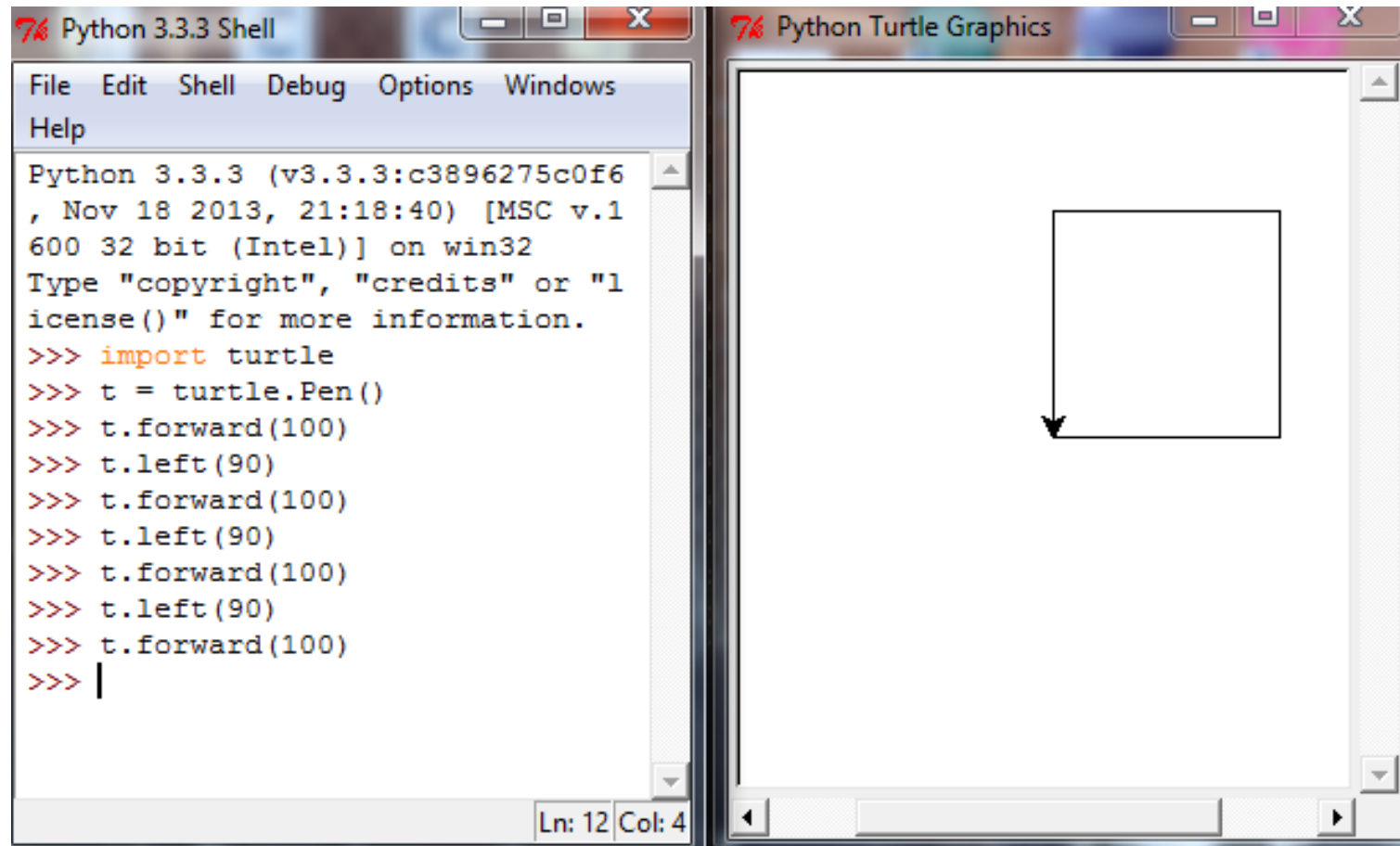
Crtanje

- Nakon prethodnog poziva dobili smo platno za crtanje na kome se nalazi strelica.
- Strelicu je moguće usmeriti pod odredjenim uglom i to komandama `t.left()` i `t.right()`. U zagrade je potrebno uneti vrednost ugla.
- Strelicu pomeramo komandama `t.forward()` i `t.backward()` i sada u zagrade stavljamo za kolik piksela zelimo da pomerimo strelicu.

Crtanje

- Zadatak: Nacrtati kvadrat čija je dužina stranice 100.

Crtanje



The image shows two side-by-side windows from a Python 3.3.3 installation. The left window, titled 'Python 3.3.3 Shell', contains a menu bar (File, Edit, Shell, Debug, Options, Windows, Help) and a text area with the following text:

```
Python 3.3.3 (v3.3.3:c3896275c0f6  
, Nov 18 2013, 21:18:40) [MSC v.1  
600 32 bit (Intel)] on win32  
Type "copyright", "credits" or "l  
icense()" for more information.  
>>> import turtle  
>>> t = turtle.Pen()  
>>> t.forward(100)  
>>> t.left(90)  
>>> t.forward(100)  
>>> t.left(90)  
>>> t.forward(100)  
>>> t.left(90)  
>>> t.forward(100)  
>>> |
```

The right window, titled 'Python Turtle Graphics', shows a large white canvas with a black square drawn on it. The square is positioned in the center-right of the canvas. The status bar at the bottom of the shell window indicates 'Ln: 12 Col: 4'.

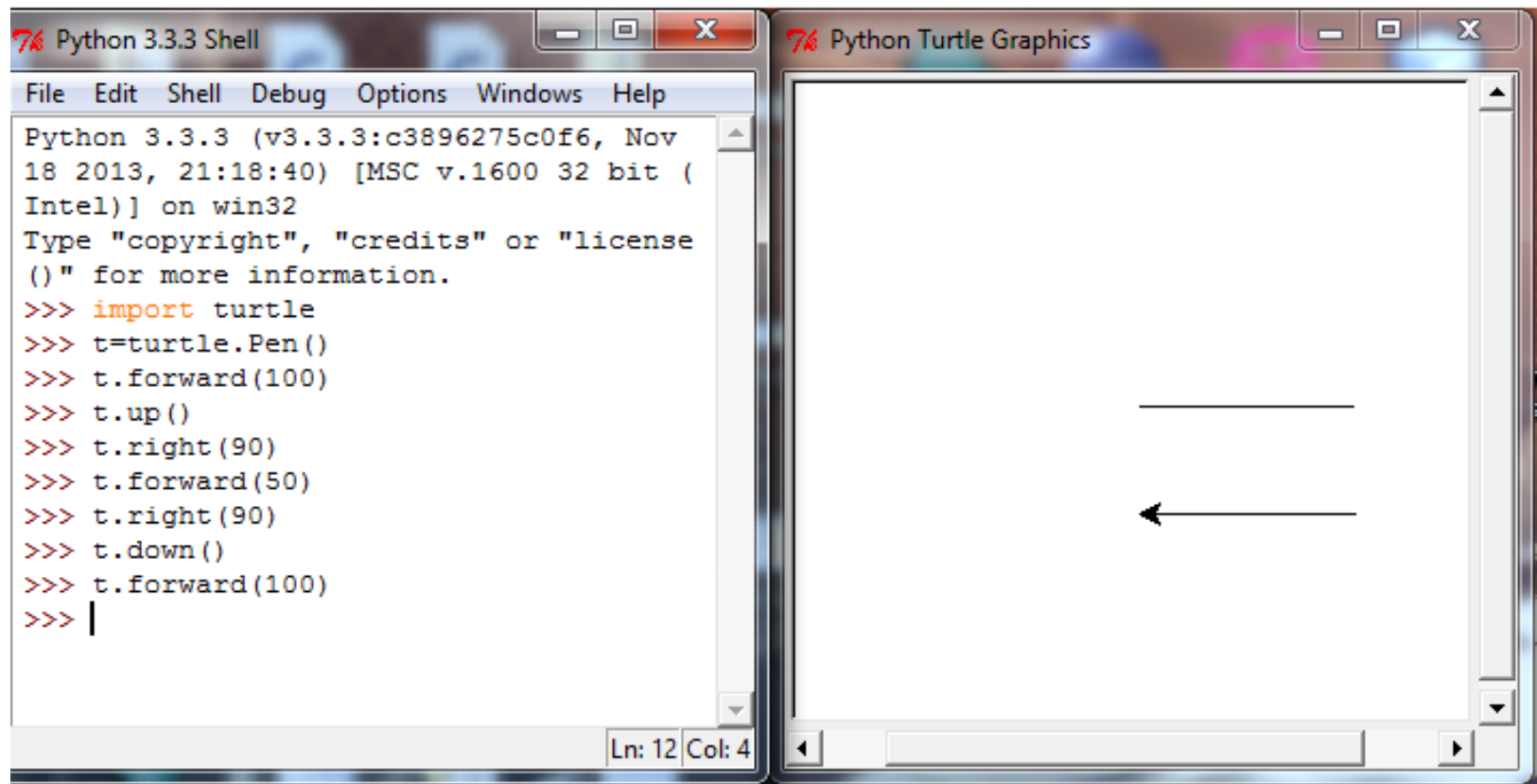
Crtanje

- Ako želimo da obrišemo sve na platnu i vratimo strelicu na centar platna tada koristimo komandu `t.reset()`, a ukoliko želimo da obišemo sve ali ostavimo strelicu na njenoj trenutnoj poziciji, tada koristimo komadnu `t.clear()`.
- Moguće je podići strelicu, odnosno olovku, pomeriti je pa je zatim ponovo spustiti. Za podizanje koristimo komandu `t.up()` a za spuštanje `t.down()`

Crtanje

- Zadatak: Nacrtati dve paralelne linije dužine 100

Crtanje



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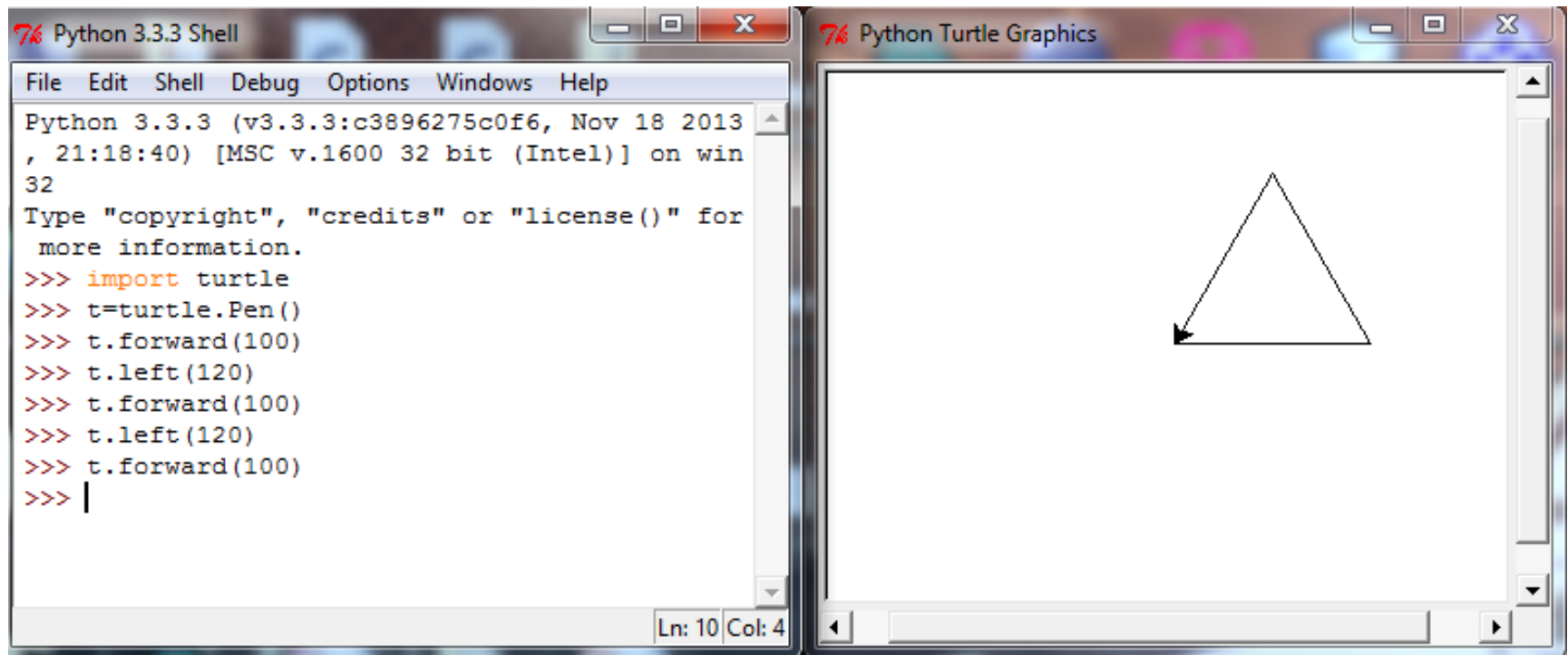
```
Python 3.3.3 (v3.3.3:c3896275c0f6, Nov 18 2013, 21:18:40) [MSC v.1600 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> import turtle
>>> t=turtle.Pen()
>>> t.forward(100)
>>> t.up()
>>> t.right(90)
>>> t.forward(50)
>>> t.right(90)
>>> t.down()
>>> t.forward(100)
>>> |
```

The status bar at the bottom of the shell window shows "Ln: 12 Col: 4". The right window, titled "Python Turtle Graphics", shows a drawing of a horizontal line with an arrow pointing left, which is the result of the code executed in the shell.

Crtanje

- Zadatak: Nacrtati jednakokraki trougao.

Crtanje



The image shows two side-by-side windows from a Python 3.3.3 environment. The left window, titled "Python 3.3.3 Shell", contains a menu bar (File, Edit, Shell, Debug, Options, Windows, Help) and a text area with the following text:

```
Python 3.3.3 (v3.3.3:c3896275c0f6, Nov 18 2013, 21:18:40) [MSC v.1600 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> import turtle
>>> t=turtle.Pen()
>>> t.forward(100)
>>> t.left(120)
>>> t.forward(100)
>>> t.left(120)
>>> t.forward(100)
>>> |
```

The right window, titled "Python Turtle Graphics", displays a white canvas with a black triangle. The triangle is equilateral with a side length of 100 units. A small black arrowhead is visible at the bottom-left vertex of the triangle, indicating the direction of the last movement.

Crtanje

- Osim pravih linija, moguće je iscrtati i kružnicu.
- Za to se koristi komanda `t.circle()` a u zagrade se stavlja dužina poluprečnika.

