

Lecture #2. 파이썬 기초 (2)

2D 게임 프로그래밍

이대현 교수



한국공학대학교
TECH UNIVERSITY OF KOREA

Turtle 모듈

- 거북이가 펜을 가지고, 화면 위를 다니면서 그림을 그림.
- 전진, 후진, 회전, 원 그리기 등 다양하게 움직이면서 그림을 그릴 수 있음.



펜을 물고 있는 거북이


모듈의 사용 문법

모듈을 사용하기 위해 수입(import)함.

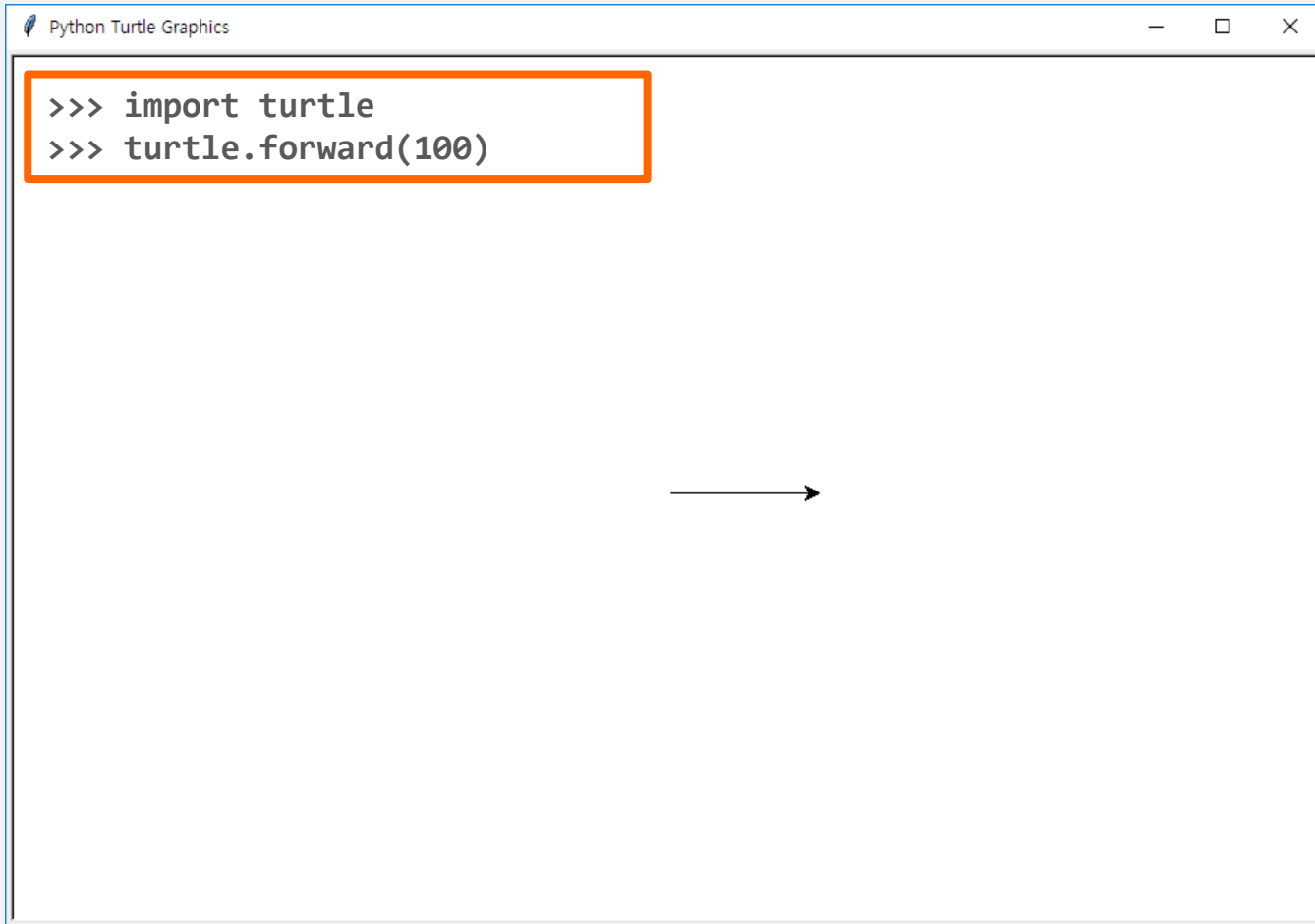


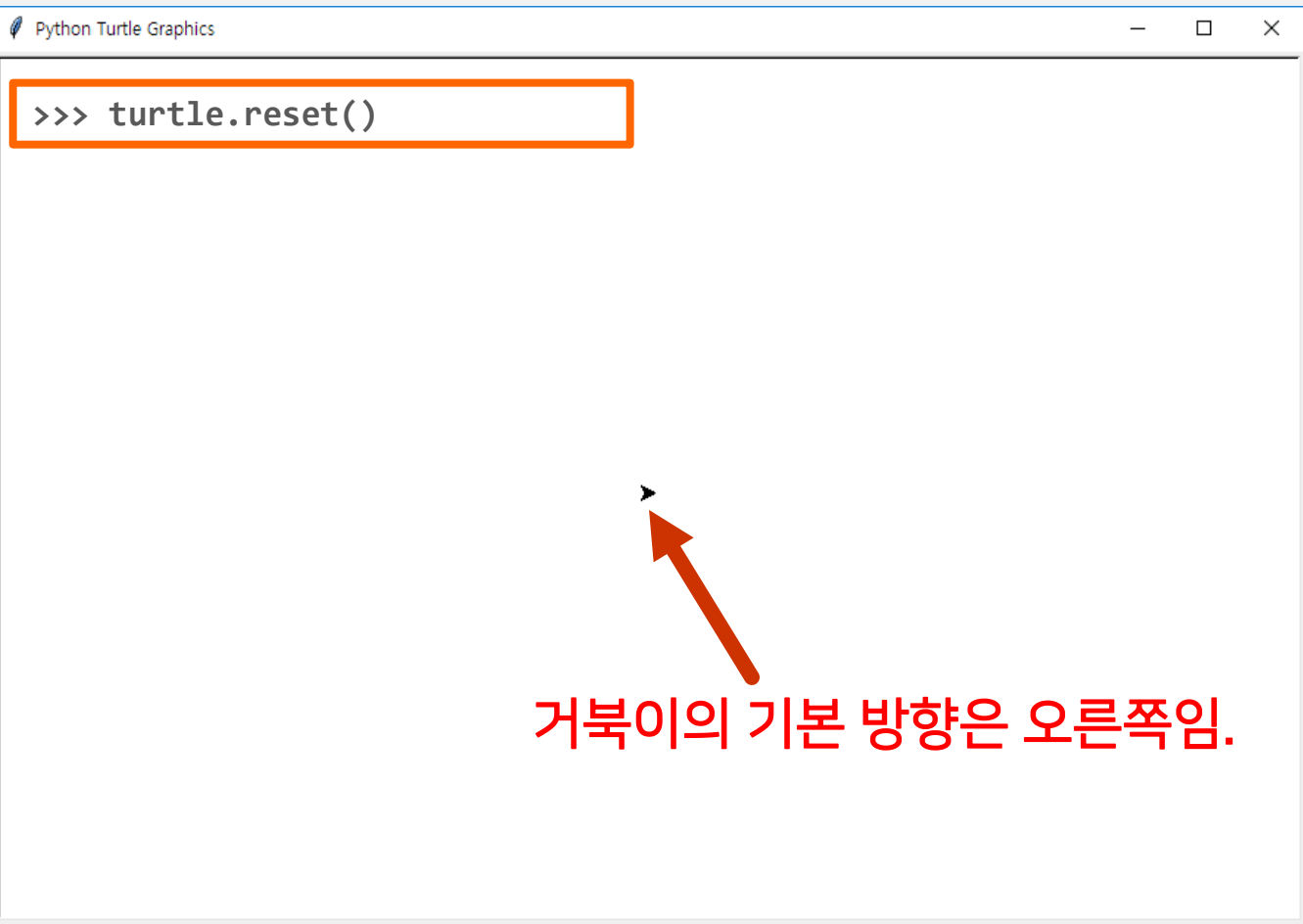
```
import turtle
```

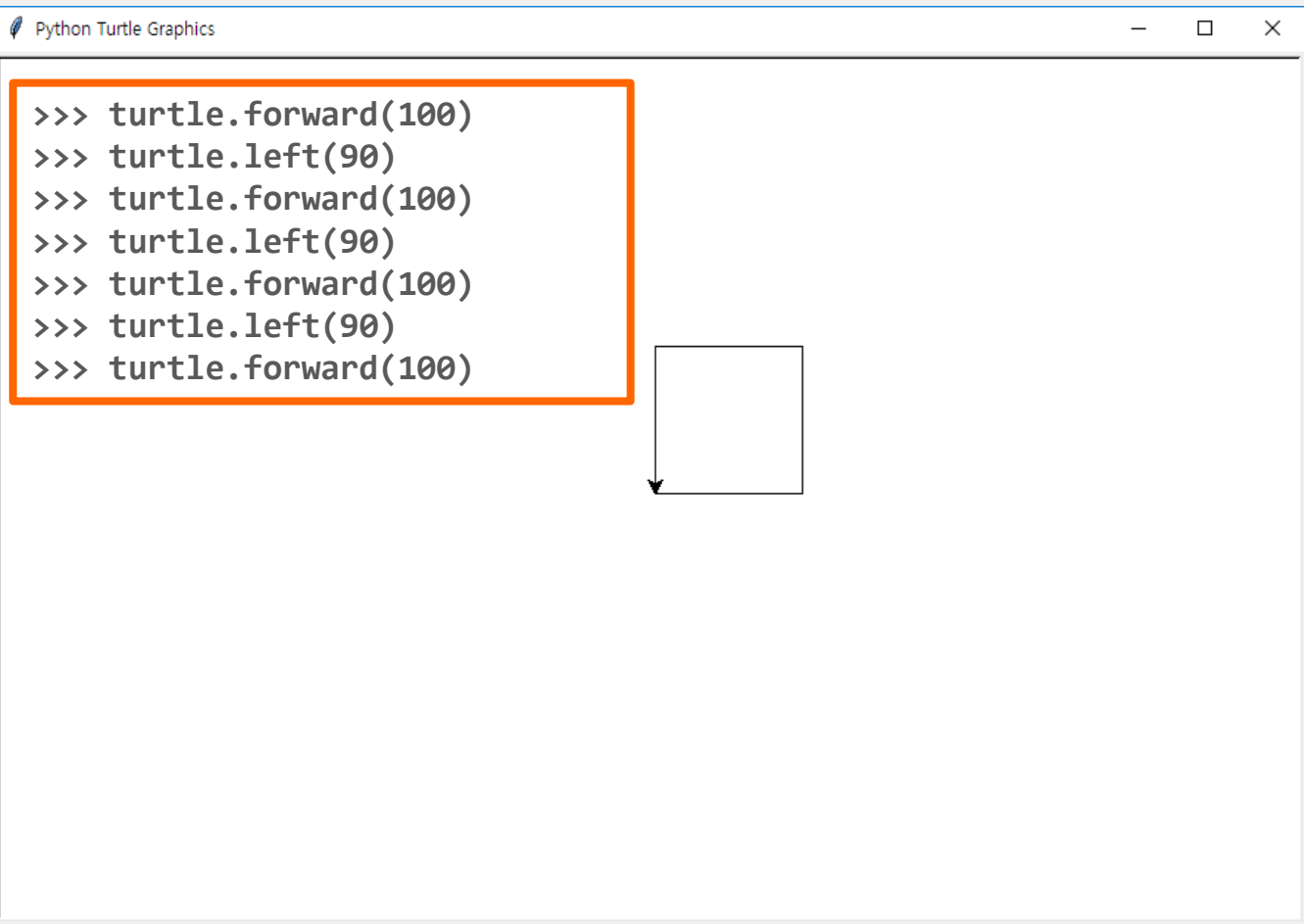
```
turtle.forward(100)
```



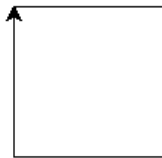
turtle 이 갖고 있는 기능(함수, function)
을 이용하여, 그림을 그린다.



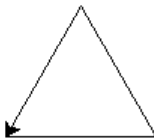




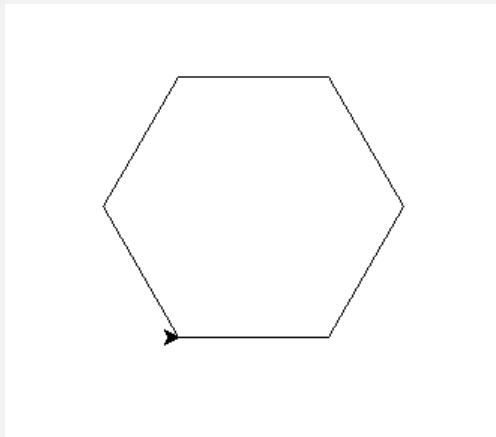
```
>>> turtle.reset()  
>>> turtle.forward(100)  
>>> turtle.right(90)  
>>> turtle.forward(100)  
>>> turtle.right(90)  
>>> turtle.forward(100)  
>>> turtle.right(90)  
>>> turtle.forward(100)
```

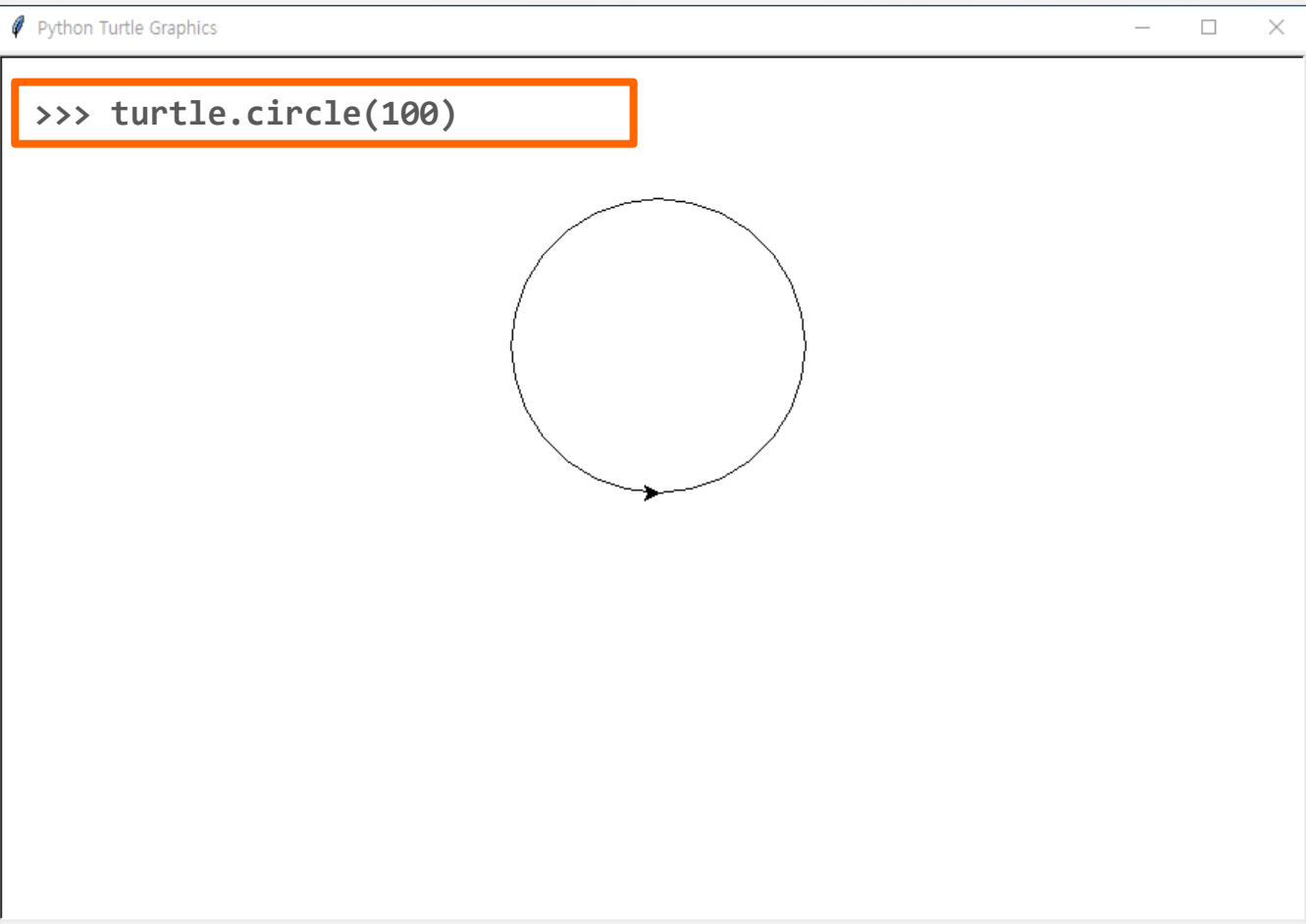


```
>>> turtle.forward(100)  
>>> turtle.left(120)  
>>> turtle.forward(100)  
>>> turtle.left(120)  
>>> turtle.forward(100)
```

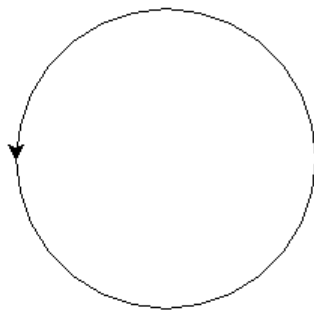


퀴즈 #1: 정육각형을 그려보자!

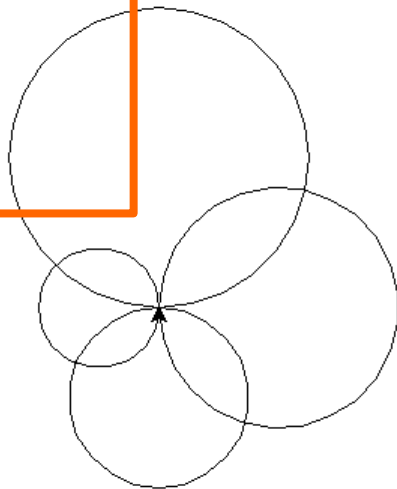




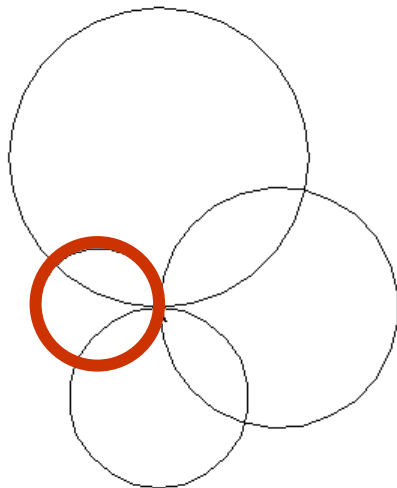
```
>>> turtle.right(90)  
>>> turtle.circle(100)
```



```
>>> turtle.circle(100)
>>> turtle.right(90)
>>> turtle.circle(80)
>>> turtle.right(90)
>>> turtle.circle(60)
>>> turtle.right(90)
>>> turtle.circle(40)
```



```
>>> turtle.updo()  
>>> turtle.undo()
```

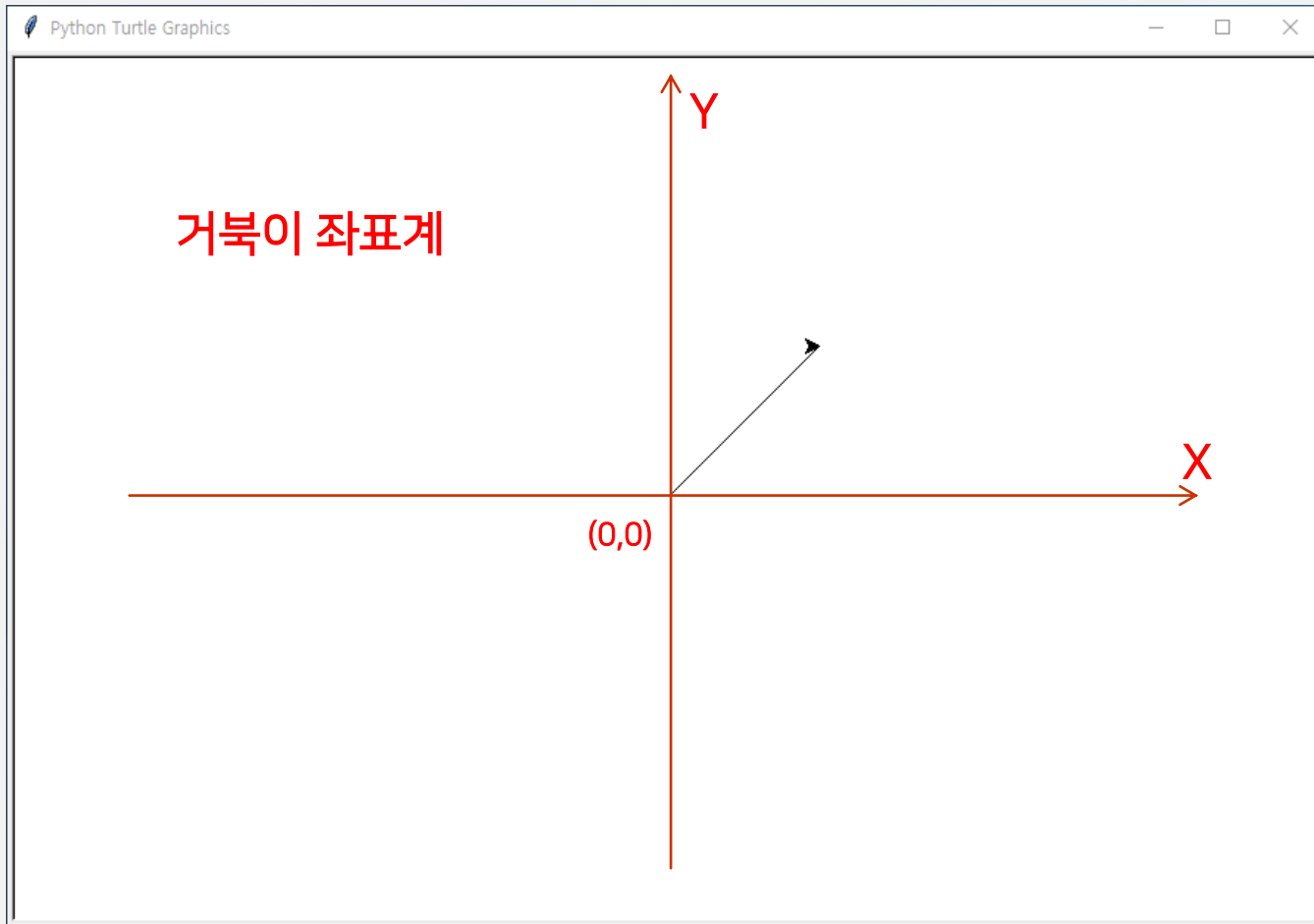


마지막에 그렸던 원이 없어짐.
이전 상태로 되돌아감.

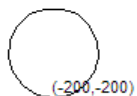
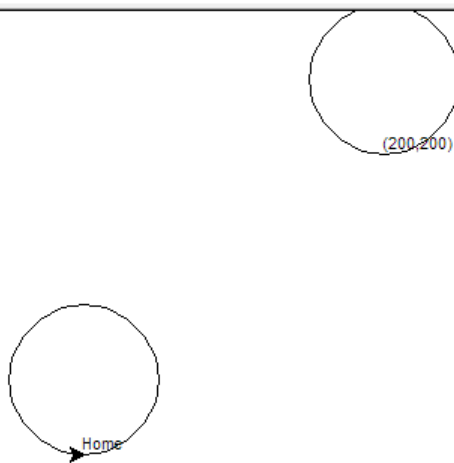
```
>>> turtle.reset()  
>>> turtle.goto(100, 100)
```



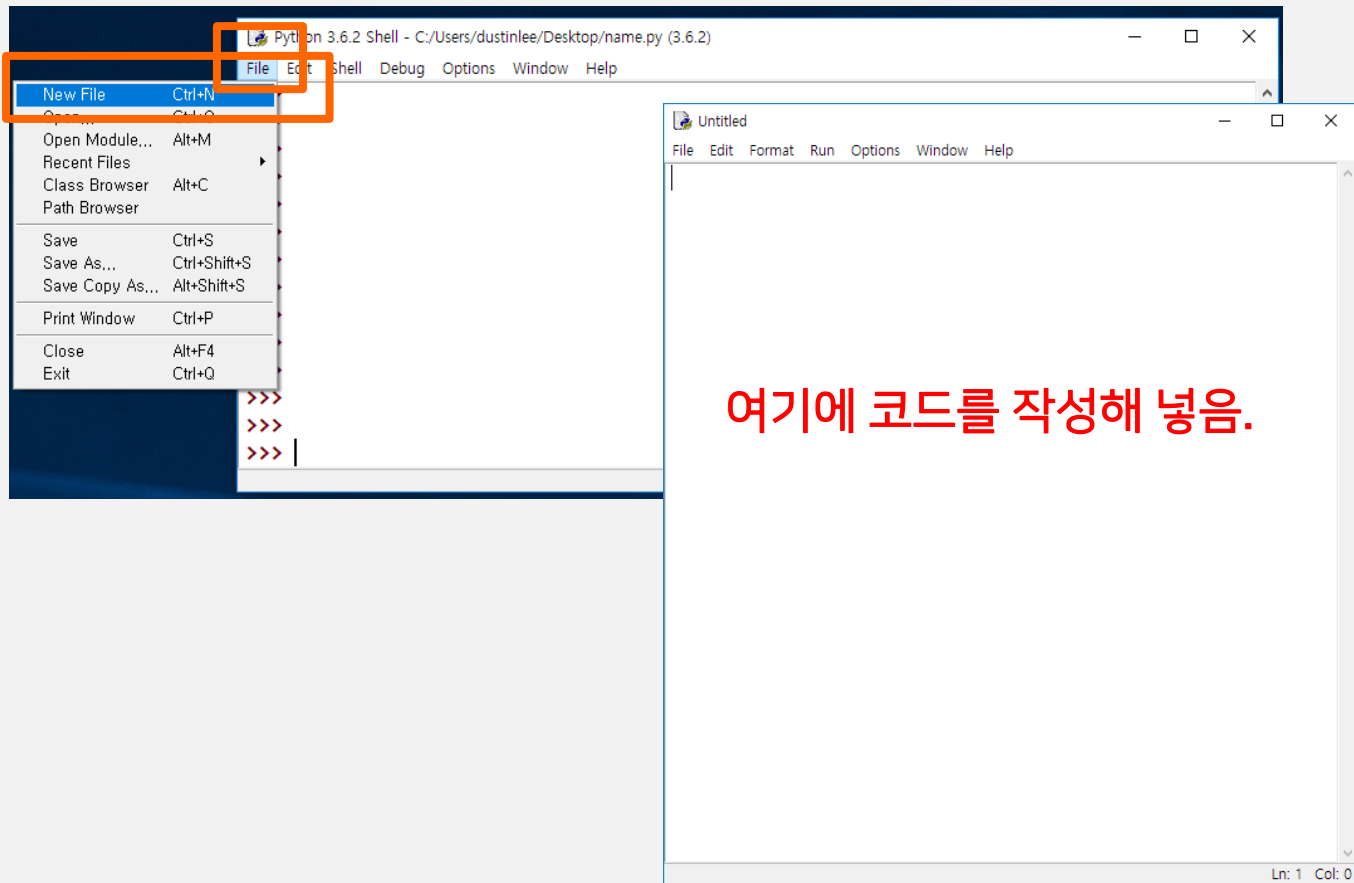
(100,100) 으로 이동한다.
거북이의 머리방향은 변함없이 여전히 오른쪽 방향.



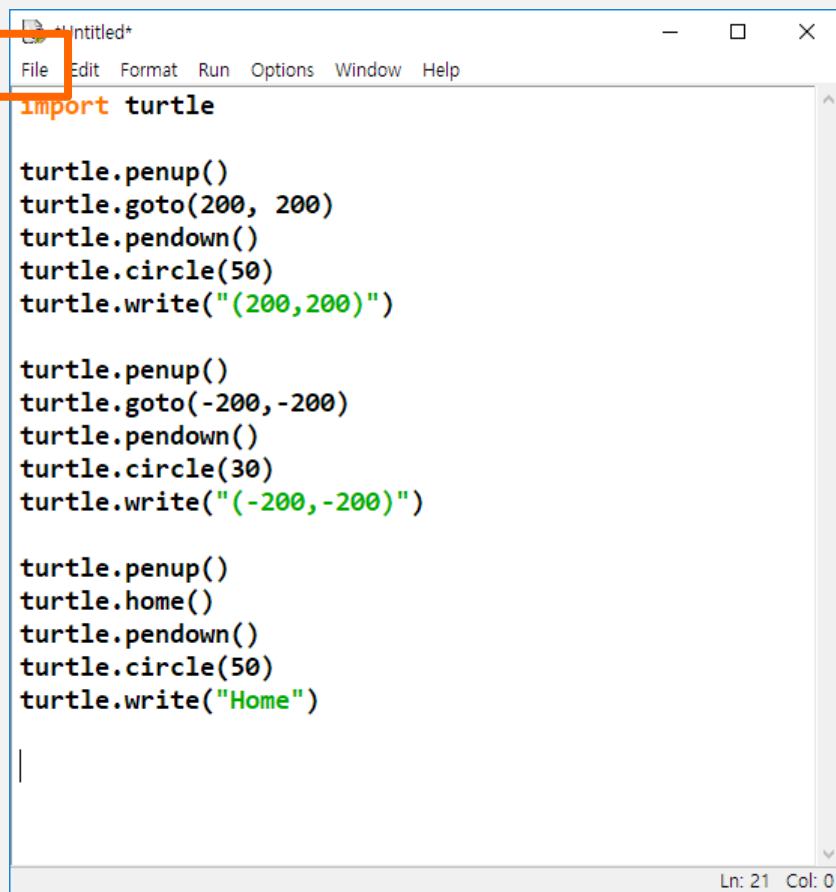
```
>>> turtle.penup()
>>> turtle.goto(200, 200)
>>> turtle.pendown()
>>> turtle.circle(50)
>>> turtle.write("(200,200)")
>>>
>>> turtle.penup()
>>> turtle.goto(-200,-200)
>>> turtle.pendown()
>>> turtle.circle(30)
>>> turtle.write("(-200,-200)")
>>>
>>> turtle.penup()
>>> turtle.home()
>>> turtle.pendown()
>>> turtle.circle(50)
>>> turtle.write("Home")
```



프로그램을 파일로 만들어서 저장



New File	Ctrl+N
Open...	Ctrl+O
Open Module...	Alt+M
Recent Files	
Class Browser	Alt+C
Path Browser	
Save	Ctrl+S
Save As...	Ctrl+Shift+S
Save Copy As...	Alt+Shift+S
Print Window	Ctrl+P
Close	Alt+F4
Exit	Ctrl+Q



The screenshot shows a Python IDE window titled "Untitled*" with a menu open. The menu is located on the left side of the window, and the "Save" option is highlighted. The code in the editor is as follows:

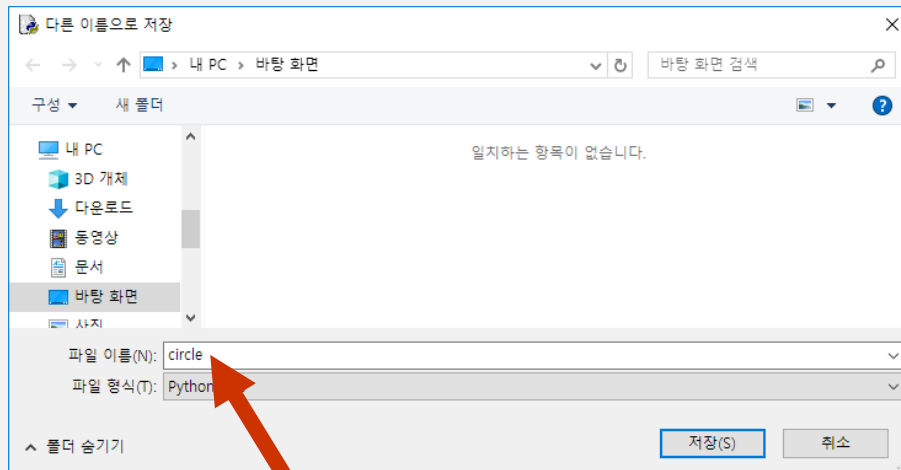
```
import turtle

turtle.penup()
turtle.goto(200, 200)
turtle.pendown()
turtle.circle(50)
turtle.write("(200,200)")

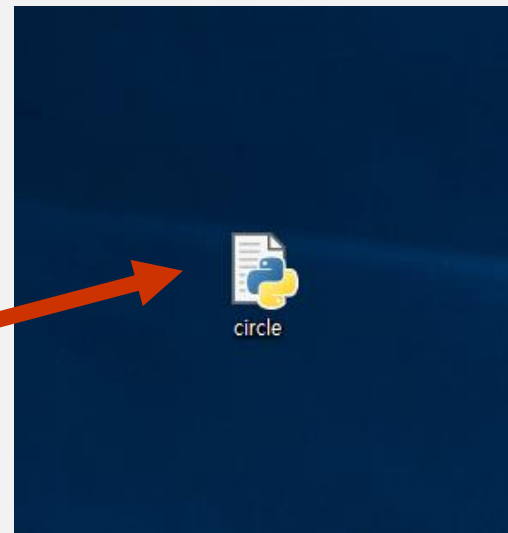
turtle.penup()
turtle.goto(-200,-200)
turtle.pendown()
turtle.circle(30)
turtle.write("(-200,-200)")

turtle.penup()
turtle.home()
turtle.pendown()
turtle.circle(50)
turtle.write("Home")
```

The status bar at the bottom right indicates "Ln: 21 Col: 0".



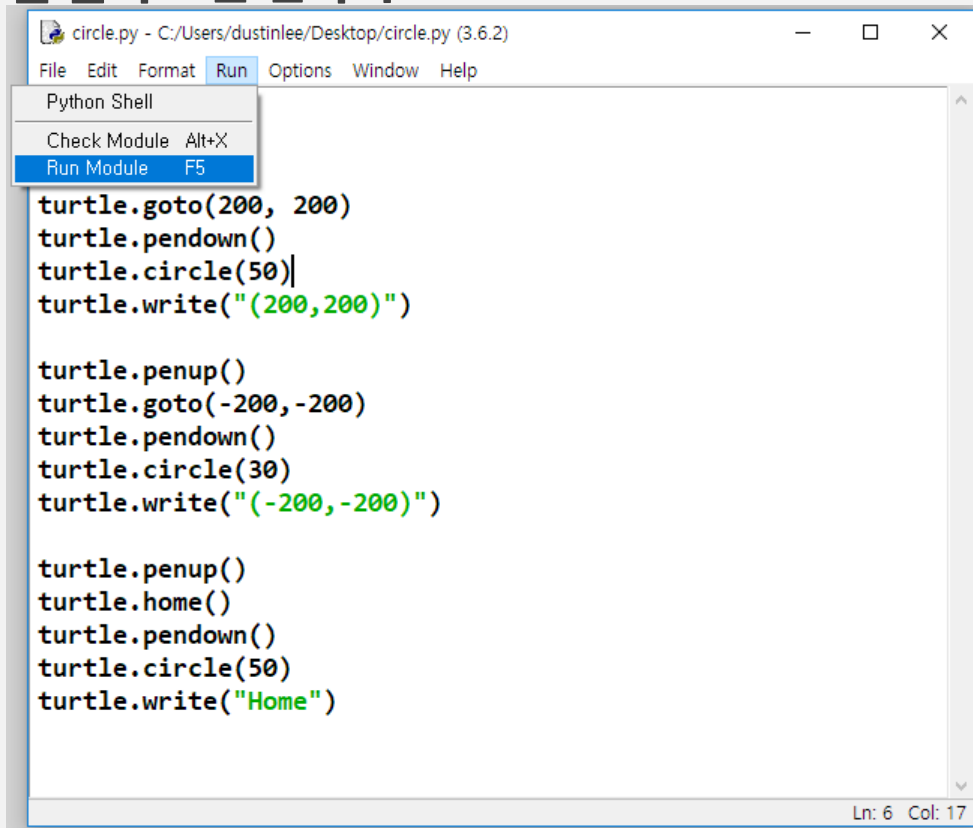
circle이라는 이름으로 바탕
화면에 저장.



바탕화면에 circle.py 라는
이름의 파일이 생성됨.

프로그램 실행 방법 #1

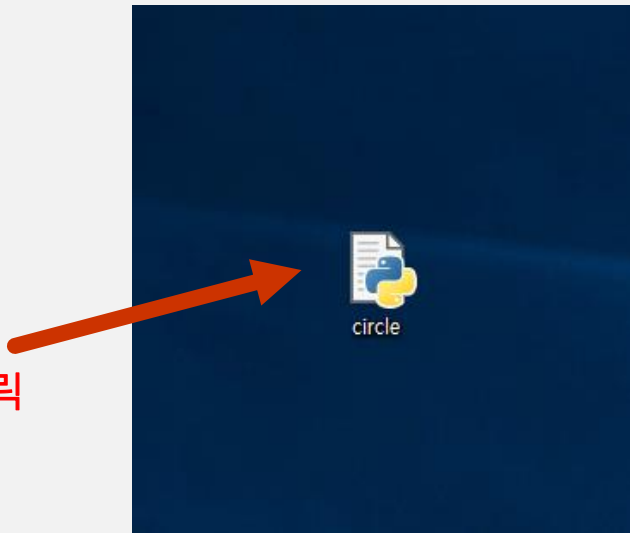
- Run → Run Module 을 클릭 또는 단축기 F5

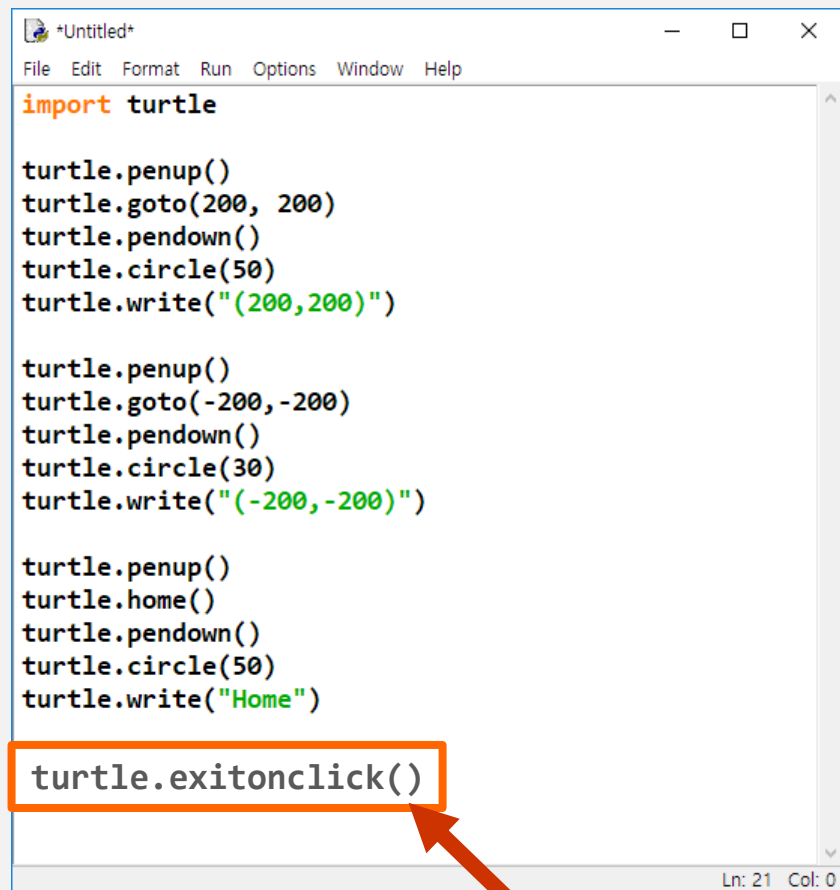


프로그램 실행 방법 #2

- 프로그램 파일을 더블 클릭하여 실행.
- 문제점은?

circle.py 를 더블 클릭





```
*Untitled*
File Edit Format Run Options Window Help

import turtle

turtle.penup()
turtle.goto(200, 200)
turtle.pendown()
turtle.circle(50)
turtle.write("(200,200)")

turtle.penup()
turtle.goto(-200,-200)
turtle.pendown()
turtle.circle(30)
turtle.write("(-200,-200)")

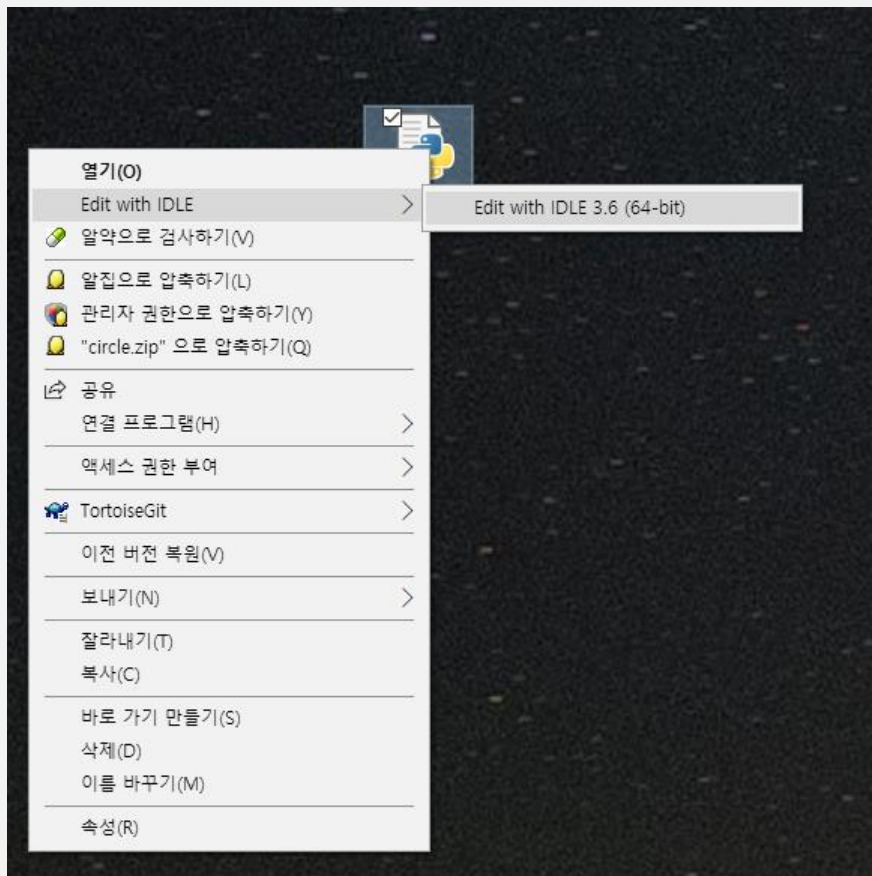
turtle.penup()
turtle.home()
turtle.pendown()
turtle.circle(50)
turtle.write("Home")

turtle.exitonclick()
```

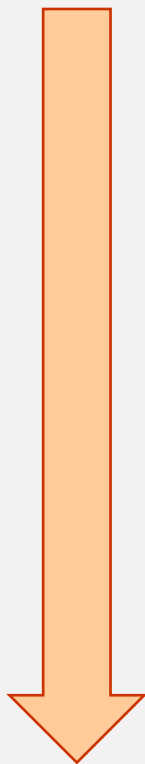
Ln: 21 Col: 0

코드 마지막 부분에 exitonclick() 추가.

마우스 오른쪽 버튼을 클릭하면, 소스코드를 직접 편집 가능.



파이썬 문장은 위에서부터 아래로 차례로 실행



```
circle.py - C:\Users\dustinlee\Desktop\circle.py (3.6.2)
File Edit Format Run Options Window Help

import turtle

turtle.penup()
turtle.goto(200, 200)
turtle.pendown()
turtle.circle(50)
turtle.write("(200,200)")

turtle.penup()
turtle.goto(-200, -200)
turtle.pendown()
turtle.circle(30)
turtle.write("(-200,-200)")

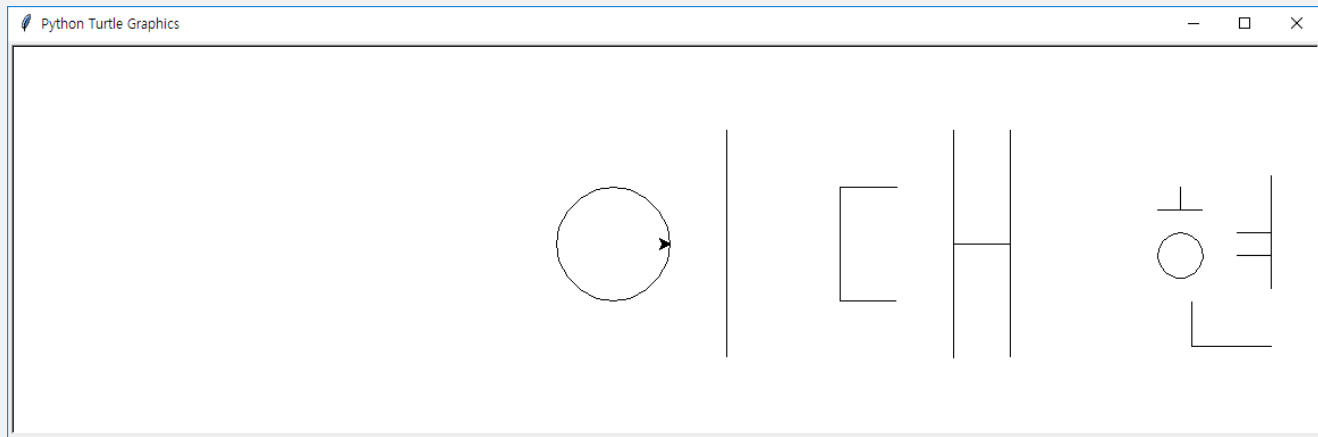
turtle.penup()
turtle.home()
turtle.pendown()
turtle.circle(50)
turtle.write("Home")

turtle.exitonclick()
```

Ln: 1 Col: 0

퀴즈 #2. 터틀로 자기 이름 그리기

- `name.py` 로 저장하고, 더블클릭해서 실행.



- 단톡방에 스크린샷 제출