

Turtle graphics in Python:

Basic Setup:

To use Turtle, you need to import it first:

import turtle

Then, you create a turtle object which you can use to control the drawing.

t = turtle.Turtle()

This **t** object represents the turtle that will move around and draw on the screen.

Basic Commands:

1. Movement:

- **forward(x)** or **fd(x)**: Moves the turtle forward by **x** units.
- **backward(x)** or **bk(x)**: Moves the turtle backward by **x** units.
- **left(angle)**: Turns the turtle left by the specified angle (in degrees).
- **right(angle)**: Turns the turtle right by the specified angle.

2. Drawing:

- **penup()**: Lifts the pen, so the turtle moves without drawing.
- **pendown()**: Lowers the pen, so the turtle starts drawing again.

3. Colors:

- **color(color)**: Changes the turtle's pen color.
- **bgcolor(color)**: Changes the background color of the window.

4. Speed:

- `speed(speed)`: Sets the turtle's speed. It can be a number from 0 (fastest) to 10 (slowest), or `fastest`, `fast`, `normal`, and `slowest`.

5. Other useful methods:

- `circle(radius)`: Draws a circle with the given radius.
 - `goto(x, y)`: Moves the turtle to the specific coordinates (x, y).
 - `setpos(x, y)`: Moves the turtle to the coordinates (x, y) without drawing.
 - `clear()`: Clears the drawing area.
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Example:

Here's a simple example of how to draw a square using Turtle:

```
import turtle

# Set up the turtle
t = turtle.Turtle()

# Loop to draw a square
for _ in range(4):
    t.forward(100) # Move forward by 100 units
    t.left(90) # Turn left by 90 degrees

# Keep the window open
turtle.done()
```

This code will draw a square with side length 100 units.

Example 2: Drawing a Circle

```
import turtle
```

```
# Set up the turtle
```

```
t = turtle.Turtle()
```

```
# Draw a circle with radius 100
```

```
t.circle(100)
```

```
# Keep the window open
```

```
turtle.done()
```

Turtle Screen:

You can also customize the screen/window using the `Screen()` class.

```
import turtle
```

```
# Create a screen object
```

```
screen = turtle.Screen()
```

Set the background color of the window

```
screen.bgcolor("lightblue")
```

Set the window title

```
screen.title("Turtle Graphics Example")
```

Create a turtle object

```
t = turtle.Turtle()
```

Draw something

```
t.forward(100)
```

Keep the window open

```
turtle.done()
```

Event Handling:

Turtle also supports event-driven programming, where you can bind actions to mouse clicks, key presses, etc.

For example, using a click event:

```
import turtle
```

```
# Function to move the turtle to the mouse click position
```

```
def move_turtle(x, y):
```

```
    t.penup()
```

```
    t.goto(x, y)
```

```
    t.pendown()
```

```
# Set up the turtle
```

```
t = turtle.Turtle()
```

```
# Bind the click event
```

```
turtle.onscreenclick(move_turtle)
```

```
# Keep the window open
```

```
turtle.done()
```

Additional Tips:

Turtle Reset: If you need to clear the screen and start fresh, you can use

```
reset():
```

```
t.reset()
```



Exit Turtle Graphics: You can use `exitonclick()` to close the Turtle graphics window when clicked:

```
turtle.exitonclick()
```

