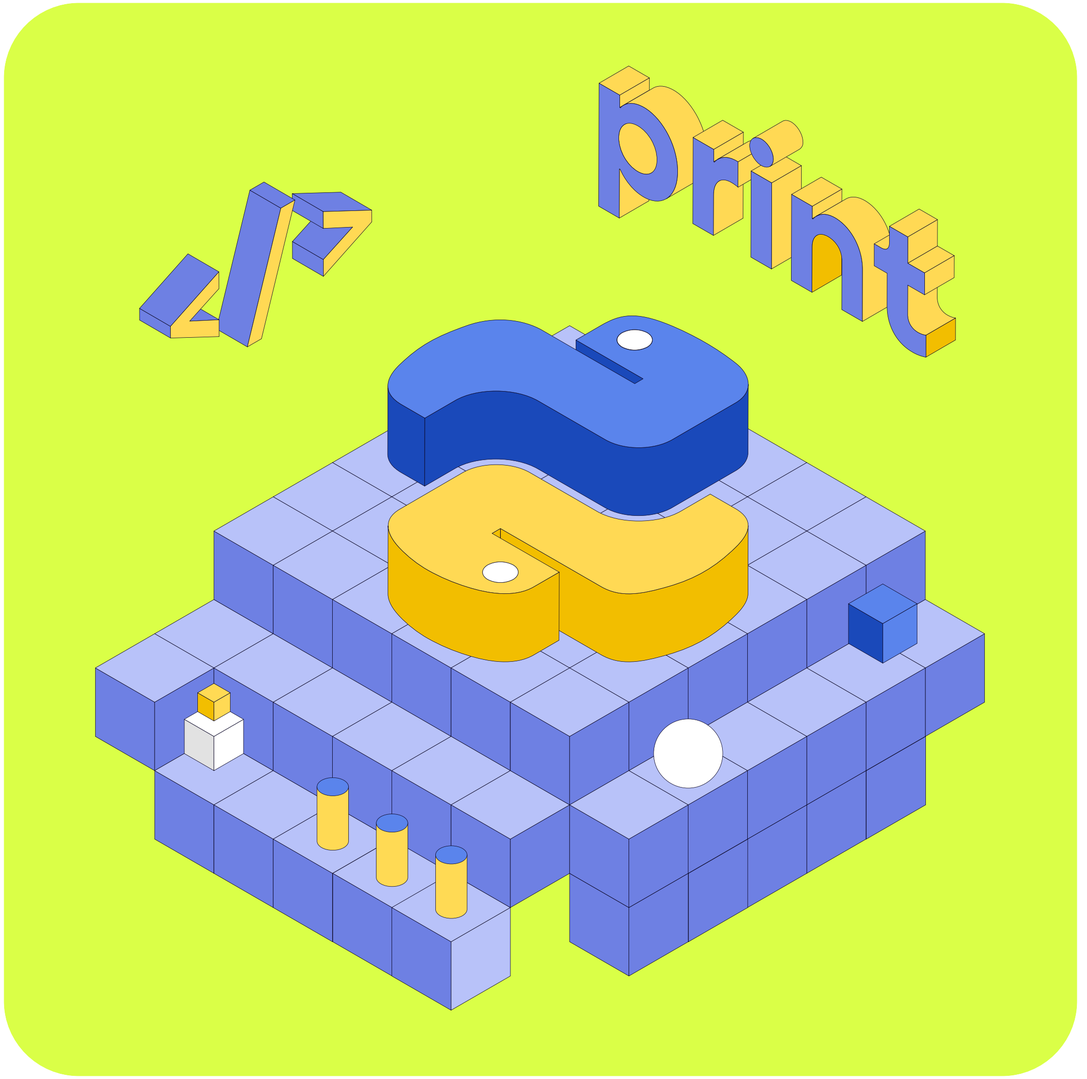
notes P 1.19

Creating computer programs in Python



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Beginner level

Materials prepared by the department
of methodological development department

"Say the color of the word"

When getting random coordinates of a shape, it is important to calculate the range correctly, so that the figure doesn't go beyond the canvas. For that it is enough to know the size of the canvas and the size of the figure. Then you can use the following formula:

```
x = random.randint(0, canvas_width - shape_width)
y = random.randint(0, canvas_height - shape_height) # the oval is created similarly
canvas.create_rectangle(x, y, x+shape_width, y+shape_height, fill=color)
```

When getting random coordinates of a shape, it is important to calculate the range correctly, so that the figure doesn't go beyond the canvas. For that it is enough to know the size of the canvas and the size of the figure. Then you can use the following formula:

```
if left <= 0 or right >= canvas_width:
dx *= -1
if top <= 0 or bottom >= canvas_height:
dy *= -1
```

```
canvas = tk.Canvas(window)
```

Creating a painting canvas.

```
canvas.move(figure, step_x, step_y)
```

Moving the shape at a specified distance.

```
canvas.create_oval(x1, y1, x2, y2, fill=color)
```

Creating an Oval.

```
canvas.create_rectangle(x1, y1, x2, y2, fill=color)
```

Creating a rectangle.

```
coords = canvas.coords(square)
```

Getting the coordinates of a shape (square).

```
window.update()
```

Updating the window

```
time.sleep(0.1)
```

Adding a 0.1 second delay.