# Cheat Sheet

### Parameters (A way to pass information in to a function)

Declaration:

def name(name, ..., name):

 statements

Example:

def box(**width, height**):

 for i in range(**height**):

 for j in range(**width**):

 print("\*", end='')

 print() # to end the line of output

Call:

function\_name(expression, ..., expression)

Example:

def main():

 **box(10, 7)** # width = 10, height = 7

 **box(5, 3)** # width = 5, height = 3

### DrawingPanel (Allows you to draw graphics on a window)

from DrawingPanel import \*

...

name = DrawingPanel(width, height, background="color")

draw shapes

Example:

panel = DrawingPanel(400, 300, background="black")

panel.draw\_rect(10, 30, 80, 100)

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| --- | --- |
| **Drawing command** | **Description** |
| panel.draw\_line(x1, y1, x2, y2) | a line from points (x1, y1) to (x2, y2) |
| panel.draw\_rect(x1, y1, w, h) | the outline of width w and height h rectangle with the upper left at (x1, y1)  |
| panel.fill\_rect(x1, y1, w, h) | A solid colored rectangle of width w and height h with the upper left at (x1, y1) |
| panel.draw\_oval(x1, y1, w, h) | the outline of the largest oval to fit within rectangle with a upper left corner at (x1, y1) , w wide and h tall |
| panel.fill\_oval(x1, y1, w, h) | A solid colored oval of the largest size to fit within rectangle with a upper left corner at (x1, y1) , w wide and h tall |
| panel.draw\_string(x, y, text="text") | the upper left of the given text at (x, y) |
| panel.set\_color(**color**) | Sets the default color to the passed in value |
| panel.set\_background\_color(**color**) | Sets the background color to the passed in value |

Color Examples:

panel.draw\_rect(10, 30, 80, 100, **fill="red"**)

panel.draw\_rect(100, 350, 20, 200, **outline="blue"**)

panel.draw\_oval(120, 140, 50, 50, **outline='#33AA7F'**)

panel.**set\_color**("cyan") # sets the default color to cyan

# Problems

### Parameters

**1.** Write a function called pyramid that takes a height as a parameter and prints out a pyramid of stars that is the height of the parameter. For example a call of pyramid(4) would output the following:

 \*

 \*\*\*

 \*\*\*\*\*

 \*\*\*\*\*\*\*

**2.** Alter your code from problem 1 to take another parameter. This parameter should be the character that the pyramid is made of. For example a call to pyramid(4, ‘-‘) would output the following:

 -

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**3.** Write a function called count\_by that takes two numbers as parameters. The first represents the amount the user should count by and the second represents the maximum number to count to. For example a call to count\_by(10, 93) would output the following: 0 10 20 30 40 50 60 70 80 90

### User input

**4.** Write a program that prompts the user for a count and then outputs a line with that count number of stars on it. Example execution see below:

How many stars? **3**

\*\*\*

**5.** Write a program that prompts the user for a width and height and then outputs the area of a box with the specified dimensions. Example execution see below:

Width? **3**

Height? **4**

The area is 12.

**6.** Write a program that prompts the user for a character 5 times. It should output the first word once, the second twice, the third three times, the fourth four times and the fifth five times. Example execution see below:

Word? **the**

the

Word? **wizard**

Wizardwizard

Word? **of**

Ofofof

Word? **Oz**

OzOzOzOz

Word? **CSc**

CScCScCScCScCSc

**Problems (continued)**

### Graphics and DrawingPanel

**7.** **a)** Draw a black outline of a 100 by 100 pixel circle on a red background. The upper left corner of the circle should be a (0, 0)

**b)** Repeat this circle 5 times to the right of the original circle. Have each new circle’s left most edge start halfway through the proceeding circle.

**c)** Parameterize the figure drawn in part b so that it can be drawn at different heights on the DrawingPanel.

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| --- | --- | --- |
|  |  |  |

# Solutions

1.

def pyramid(count):

 for i in range(1, count + 1):

 print(" " \* (-1 \* i + count + 1), end='')

 print("\*" \* (i \* 2 - 1))

2.

def pyramid(count, symbol):

 for i in range(1, count + 1):

 print(" " \* (-1 \* i + count + 1), end='')

 print(symbol \* (i \* 2 - 1))

3.

def count\_by(step, goal):

 for i in range(0, goal, step):

 print(str(i) + " ", end='')

4.

def main():

 count = int(input("How many stars? "))

 print(count \* "\*")

5.

def main():

 width = int(input("Width? "))

 height = int(input("Height? "))

 print("The area is " + str(width \* height) + ".")

6.

def main():

 for i in range(1, 6):

 word = input("Word? ")

 print(word \* i)

7.

from DrawingPanel import \*

def main():

 panel = DrawingPanel(400, 400, background="red")

 circles(panel, 0)

 circles(panel, 200)

def circles(panel, y):

 for i in range(5):

 panel.draw\_oval(i \* 50, y, 100, 100)