Καθηγητής Πληροφορικής
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EXERCISES
CHAPTER 6

VCZ

EXERCISE 1

Fill the missing words in the following sentences:

1. One of the most interesting features of Logo is _____ which is also called turtle's geometry.
2. In Microworlds programming environment, there is a _____ that lives in the screen and corresponds to our commands.
3. The turtle can design geometrical shapes and other patterns in the screen by leaving its _____ as it moves on the page.
4. Using _____ command, we can clear all the graphics of the page and return the turtle to its initial position at the center of the screen.
5. The _____ command allows the turtle to leave its trace as it moves.
6. Using the _____ command, we can avoid wasting time by writing the same set of instructions many times
7. The `repeat` command accepts a list of _____ inside square brackets [ ] and specifies the number of iterations to be executed.
8. According to the theorem of _____ path, a turtle should rotate 360 degrees in order to complete its route around a closed polygon as well as return to its home position and direction.
9. The _____ command is followed by a number that indicates the number of steps that the turtle moves backwards.
10. The `right` command is followed by a number that indicates how many _____ the turtle turns to the right.
11. To draw a more complex shape like a _____, the turtle needs to cover at least 2 complete rotations of 360 degrees each.
12. Using the _____ command, we can change the direction of the turtle inside the page.
13. Using the _____ command, the turtle can scroll forward covering a particular distance and moving with a particular speed.
14. The _____ command clears all the graphics of the page without changing the position of the turtles.
15. The reporter _____ reports a number that indicates the current color of the page.
16. Using the _____ command, we can make all the turtles of the page to execute a particular list of instructions simultaneously.
17. The shortcut of the command `talkto` in Microworlds is _____.
18. Using the _____ command, we can change the direction of a turtle in order to become oriented to another turtle.
19. Using the _____ command, we can make a turtle invisible, while using the _____ command we can make it visible again.
20. The pen size of a turtle fluctuates from _____ to _____.

EXERCISE 2

Using the **repeat** command, **write the instructions** needed for drawing the following geometrical shapes:

A) **square** with a side length 50 steps
B) **triangle** with a side length 150 steps
C) **pentagon** with a side length 70 steps
D) **hexagon** with a side length 130 steps
E) **octagon** with a side length 60 steps
F) **icosagon** with a side length 30 steps

EXERCISE 3

Given that the initial orientation of the turtle is to the north, you have to design **the geometrical shapes** that are created by the following sets of instructions. What is the **new position of the turtle** at the end of these instructions?

(A)

```
repeat 3 [pd fd 100
          pu fd 100]
```

(B)

```
pd
bk 100 lt 90
bk 100 lt 90
bk 100 lt 90
```

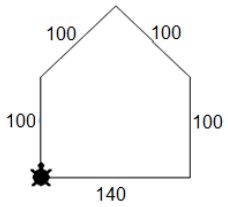
(C)

```
pd
repeat 3 [fd 50 rt 90
          fd 50 lt 90]
```

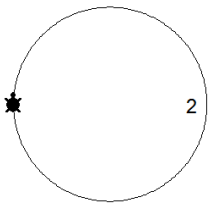
EXERCISE 4

Write the **instructions** needed to design the following **geometrical shapes**:
(the dimensions of the sides are shown below):

A. a **house** with a side length 100 steps



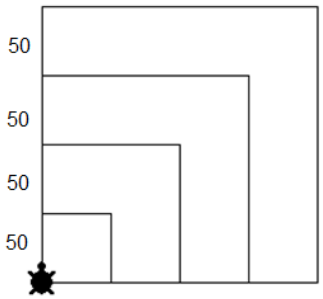
B. a **circle** (360-agon) with a side length 2 steps



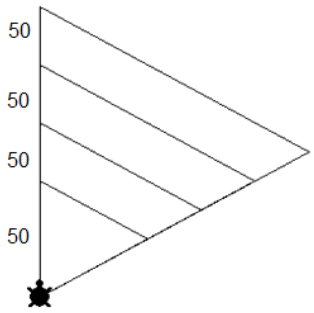
EXERCISE 5

Design the following shapes using instructions of Logo vocabulary:
(the dimensions of the sides are shown below):

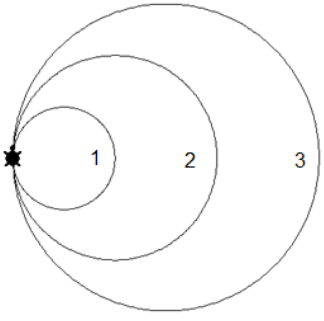
(A)



(B)



(Γ)



Evangelos C. Zioulas *(IT Teacher)*

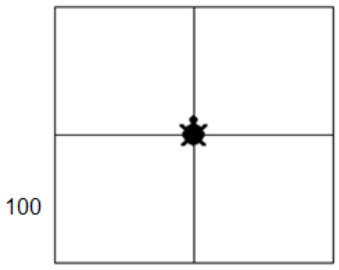
EXERCISE 6

Design the following **geometrical shapes** using two ways for each one of them:
(dimensions are shown below)

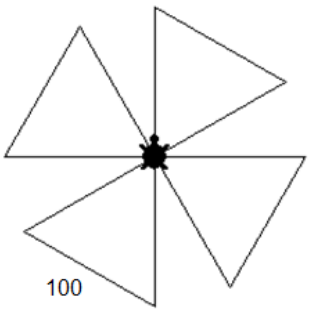
A) Simple set of instructions

B) Nested `repeat` structure.

(A)

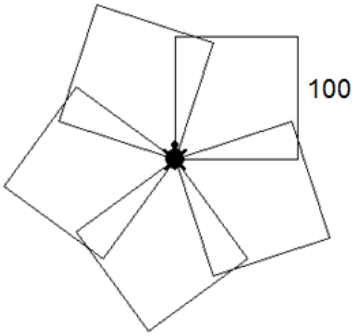


(B)



EXERCISE 7

Notice the adjacent shape that consists of 5 squares with a side length 100 steps and then write the **set of instructions** that are needed to create the following shapes of similar dimensions, using the **nested repeat** structure:



- **A.** 10 squares
- **B.** 5 triangles
- **C.** 10 triangles
- **D.** 5 hexagons

EXERCISE 8

Write the **Logo instructions** which execute the following actions:

1) Change the background color of the page in yellow (number 45)
2) Create a visible turtle with a name t1
3) Place turtle t1 to the coordinates (-200,150)
4) Create a visible turtle with a name t2
5) Place turtle t2 to the coordinates (200,-150)
6) Change the color of t1 in red (number 15) and t2 in blue (number 105)
7) Glide turtle t1 towards turtle t2 200 steps with a speed of 0.1
8) Glide turtle t2 towards turtle t1 200 steps with a speed of 5 times faster
9) Turn both of the turtles 45 degrees to the right simultaneously
10) Make both of the turtles draw a square with a side length of 50 steps simultaneously
11) Clear the graphics of the screen without moving any turtle
12) Change the background color in white (0)
13) Using the `talkto` command, change the direction of both turtles to the north