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PROJECT THEME

«DRAWING WITH LOGO»

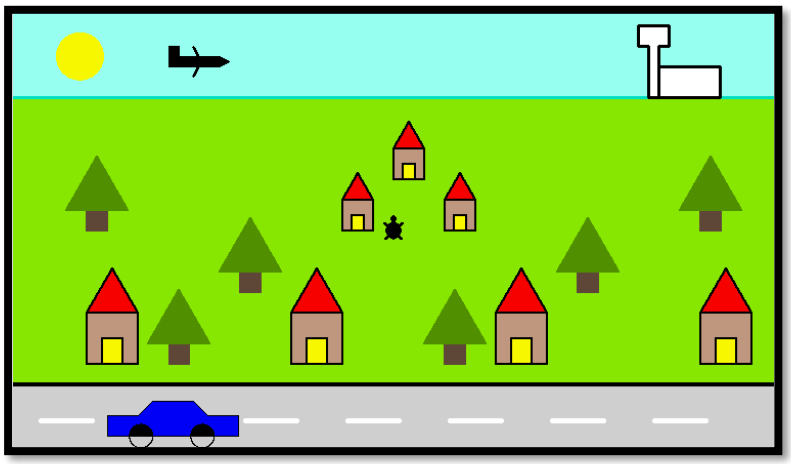
ΕΚΠΑΙΔΕΥΤΗΡΙΑ "Ο ΠΛΑΤΩΝ" WORLD SCHOOL

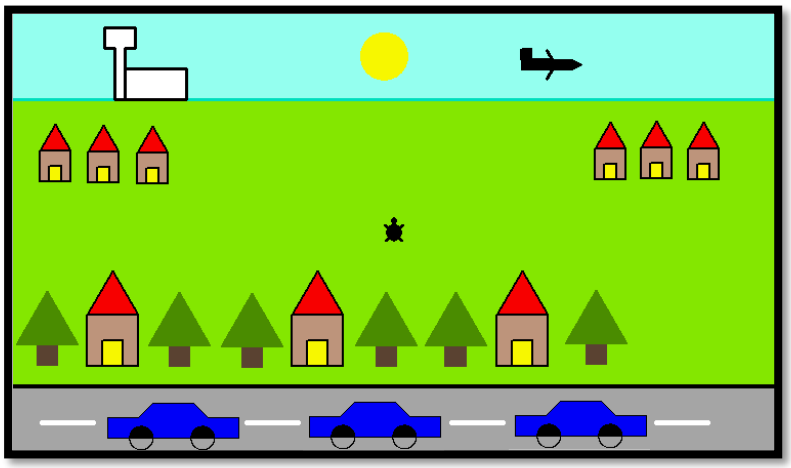
PROJECT OBJECTIVE	Create a **graphic (landscape)** using the programming language of Logo and the turtle's geometry in a programming environment called Microworlds EX. The graphic (scenic) that is to be designed has to be rich in graphical elements. For example, it may contain a variety of graphical objects such as sky, road, cars, meadow, sun, clouds, houses, airplanes, airport, trees etc. Each graphical element on the screen should be constructed with an individual procedure (regular or parametric), while the overall landscape should be designed with a single call superprocedure. The selection of graphical elements to create as long as the screen sizes, the colors, and the final form of the scenic is free.
RECOMMENDED ASSISTANCE	▪ Teacher's Website - Notes (Chapters 6, 7) ▪ Microworlds EX, online help ▪ Microworlds EX official site http://www.microworlds.com/index.html
IB CRITERIA	**Global Context: Personal & Cultural Expression** **Inquiring & Analysing (scale 0-8)** ▪ Explain and justify the **theme** of your drawing **(2/8)** ▪ List what **graphical elements** are included in your drawing **(2/8)** ▪ Explain the **techniques** to produce each one of the graphical elements **(2/8)** ▪ **Brake your problem** into individual subproblems (procedures) **(2/8)** **Developing Ideas (scale 0-8)** ▪ Draw at least 2 **alternative designs** (ideas to be developed) **(4/8)** ▪ Select one design to be developed to your final product and justify your **selection** with convincing arguments **(2/8)** ▪ Present a **diagram** of the procedures that constitute your program **(2/8)** **Creating the Solution (scale 0-8)** ▪ Use the **Logo** programming language to draw your graphic **(4/8)** ▪ Produce your program based on **procedural programming** techniques **(2/8)** ▪ **Present** and explain efficiently your final product inside class **(2/8)** **Evaluating (scale 0-8)** ▪ Explain at least 2 **positive points** of your final product **(3/8)** ▪ Explain at least 2 **negative points** of your final product **(3/8)** ▪ Describe how your solution could be **improved (2/8)**
TOOLS	**Microworlds EX** to implement the design to the final product **Windows Paint** (or other Drawing Software) to create the designs **MS PowerPoint** to write your report

PRODUCTS OF THE PROJECT	▪ A logo file **.mwx** including the **source code** of your program ▪ Image files **.jpg** including screenshots of your alternative designs ▪ A **.pptx** file for creating your report All the necessary files of your work must be stored inside a folder that should be titled with the names of the team members and must be submitted to the teacher until **Friday 11/05/2018**.
GENERAL COMMENTS	This project contributes **50%** to the grade of the **2nd semester**. The project is **mandatory** for all students of this class. Each **working group** should include **2 or 3 students**.
PRESENTATION DAY	**Monday 14/05/2018 (class B1)** **Tuesday 15/05/2018 (class B2)**

SAMPLE OF A PROJECT

ALTERNATIVE DESIGNS OF THE DRAWING



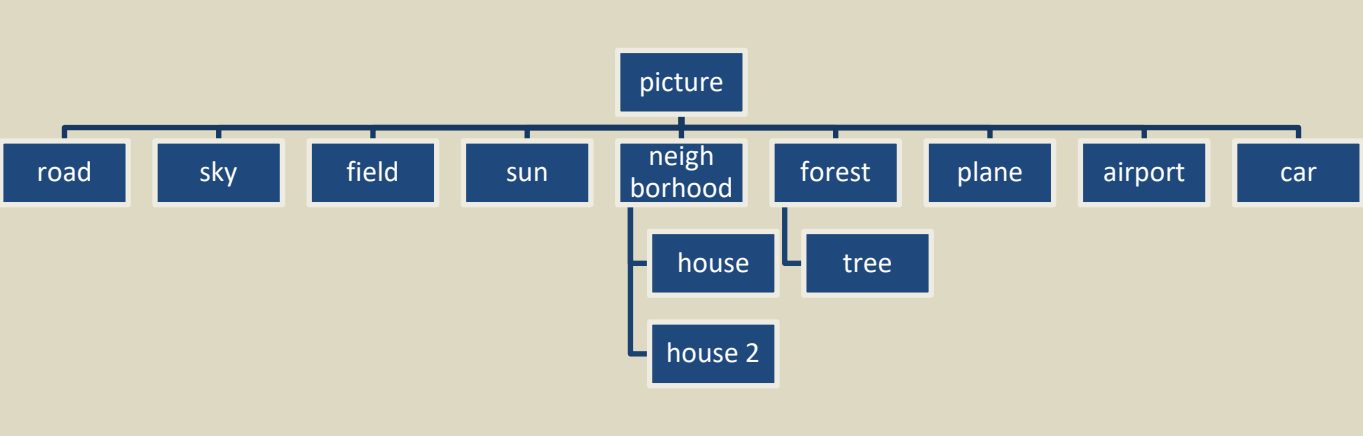


Evangelos C. Zioulas *(IT Teacher)*

Graphical Elements included

Road
Sky
Field
Sun
House (big)
House 2 (small)
Neighborhood (group of houses)
Tree
Forest (group of trees)
Plane
Airport
Car
Picture (Superprocedure)

PROBLEM ANALYSIS
(procedural programming)



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IMPLEMENTATION OF THE DESIGN (PROGRAM SCRIPTS)

```
to road
 pu
 setpos [-370 -150]
 pd rt 90
 setc 9
 setpensize 4
 fd 750
 pu fd 20 rt 90 fd 35
 setc 3
 fill
 setc 0
 setpensize 5
 lt 90
 repeat 7
   [pd fd 50 pu fd 50]
 lt 90
 setpos [0 0]
 setc 9
 setpensize 1
end
//-------------------------------------------------
to sky
 pu
 setpos [-370 130]
 pd rt 90
 setc 356
 setpensize 3
 fd 750 pu
 setc 352
 lt 90 fd 20 fill
 setpos [0 0]
 setc 9
 setpensize 1
 pd
end
//-------------------------------------------------
to field
 pu
 setc 54
 fill pd
 setc 9
 pd
end
//-------------------------------------------------
to sun
 pu
 setpos [-330, 170]
 setc 45 pd
 repeat 360 [fd 0,4 rt 1]
 pu rt 90 fd 10 fill
 setpos[0 0]
 setc 9
 lt 90
 pd
end
```

```
to house
 pd
 setpensize 2
 setc 9
 repeat 4 [fd 50 rt 90]
 rt 90 fd 15 lt 90 fd 25
 rt 90 fd 20 rt 90 fd 25
 lt 90 bk 35 lt 90 pu
 fd 5 rt 90 fd 5
 setc 35 fill
 bk 5 lt 90 bk 5
 rt 90 fd 20
 lt 90 fd 15
 setc 45 fill
 bk 15 rt 90
 bk 20 lt 90
 setc 9 pd
 fd 50 rt 30
 repeat 3 [fd 50 rt 120]
  lt 30 pu
  rt 90 fd 25
  lt 90 fd 10
  setc "15 fill
  bk 10 rt 90
  bk 25 lt 90
  setc 9
  bk 50
  setpensize 1
end
//-------------------------------------------------
to house2
 pd
 setpensize 2
 setc 9
 repeat 4 [fd 30 rt 90]
 rt 90 fd 9 lt 90 fd 15
 rt 90 fd 12 rt 90 fd 15
 lt 90 bk 21 lt 90 pu
 fd 3 rt 90 fd 3
 setc 35 fill
 bk 3 lt 90 bk 3
 rt 90 fd 12
 lt 90 fd 9
 setc 45 fill
 bk 9 rt 90
 bk 12 lt 90
 setc 9 pd
 fd 30
 rt 30
 repeat 3 [fd 30 rt 120]
  lt 30 pu rt 90 fd 15
  lt 90 fd 6 setc "15 fill
  bk 6 rt 90
  bk 15 lt 90
  setc 9
  bk 30
  setpensize 1
end
```

```
            to neighborhood
              pu
              setpos [-300 -130]
              house pu
              setpos [-100 -130]
              house pu
              setpos [100 -130]
              house pu
              setpos [300 -130]
              house pu
              setpos [50 0]
              house2 pu
              setpos [0 50]
              house2 pu
              setpos [-50 0]
              house2 pu
              setpos [0 0] pd
            end
//-------------------------------------------------
            to tree
              pd
              setc 39
              repeat 4 [fd 20 rt 90]
              pu fd 5 rt 90 fd 5 fill
              bk 5 lt 90 bk 5
              setc 9
              fd 20 lt 90 fd 20 rt 90
              setc 58
              setpensize 2
              pd rt 30
              repeat 3 [fd 60 rt 120]
              lt 30 pu
              rt 90 fd 10 lt 90 fd 10
              fill
              bk 10 rt 90 bk 10 lt 90
              setc 9 pu
              bk 20 rt 90 fd 20 lt 90
            end
//-------------------------------------------------
            to forest
              pu
              setpos [-220 -130]
              tree pu
              setpos [180 -60]
              tree pu
              setpos [-150 -60]
              tree pu
              setpos [50 -130]
              tree pu
              setpos [-300 0]
              tree pu
              setpos [300 0]
              tree
              pu
            end
//-------------------------------------------------
```

```
            to plane
              pu
              setpensize 1
              setpos [-220 170]
              pd
              fd 10 rt 90
              fd 10 rt 90
              fd 10 lt 90
              fd 20 lt 120
              setpensize 3
              fd 10 bk 10 rt 120
              setpensize 1
              fd 20 rt 30
              fd 10 rt 120
              fd 10 rt 30
              fd 20 lt 60
              setpensize 3
              fd 10 bk 10 rt 60
              setpensize 1
              fd 30 rt 90 fd 10
              pu rt 90 fd 5
              fill lt 90
              setpos [0 0] pd
            end
//-------------------------------------------------
            to airport
              pu setpos[250 130]
              setpensize 3
              pd
              fd 50 lt 90
              fd 10 rt 90
              fd 20 rt 90
              fd 30 rt 90
              fd 20 rt 90
              fd 10 lt 90
              fd 50 rt 90
              fd 10 rt 90
              pu fd 5 rt 90 fd 5
              setc 0 fill
              setc 9
              bk 5 lt 90 bk 5 pd
              rt 90 fd 10
              lt 90 fd 30
              rt 90 fd 60
              rt 90 fd 30
              rt 90 fd 60 rt 90
              pu fd 5 rt 90 fd 5
              setc 0 fill
              bk 5 lt 90
              bk 5 lt 90
              fd 10 rt 90
              setc 9
              setpensize 1
              pu setpos[0 0]
              pd
            end
//-------------------------------------------------
```

```
to car
  pu
  setpos[-280 -200] pd
  fd 20 rt 90 fd 30 lt 45
  fd 20 rt 45 fd 40 rt 45
  fd 20 lt 45 fd 30 rt 90
  fd 20 rt 90 fd 127 bk 20
  rt 90
  repeat 360 [fd 0,2 rt 1]
  pu rt 90 fd 5 lt 90 fd 5
  setc 9 fill
  bk 5 rt 90 bk 5 lt 90 pd
  rt 90 fd 60 lt 90
  repeat 360 [fd 0,2 rt 1]
  pu rt 90 fd 5 lt 90 fd 5
  setc 9 fill
  bk 5 rt 90 bk 5 lt 90
  fd 5 setc 105 fill
  fd 10 setc 105 fill
  setc 9
  setpos[0 0] pd
end
//-------------------------------------------------
to picture
 road
 sky
 field
 sun
 plane
 neighborhood
 forest
 airport
 car
end
```

Basic superprocedure which calls each one of the individual procedures