



0, 1, 2, ...



0, 1, 2, 720!, ?



$$720 = 6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1$$



$$6 = 3! = 3 \times 2 \times 1$$



$$720! = 3!!!!$$



0, 1!, 2!!, 3!!!!, 4!!!!!, ...



Computation should be on every child's low shelf.

Using the Sugar Learning Platform




Walter Bender


Sugar Labs

sugarlabs.org


conservancy.softwarefreedom.org



Goal: To give everyone the opportunity to live a rich life full of learning.



Means: A free software platform that facilitates exploring, collaborating, and reflecting.



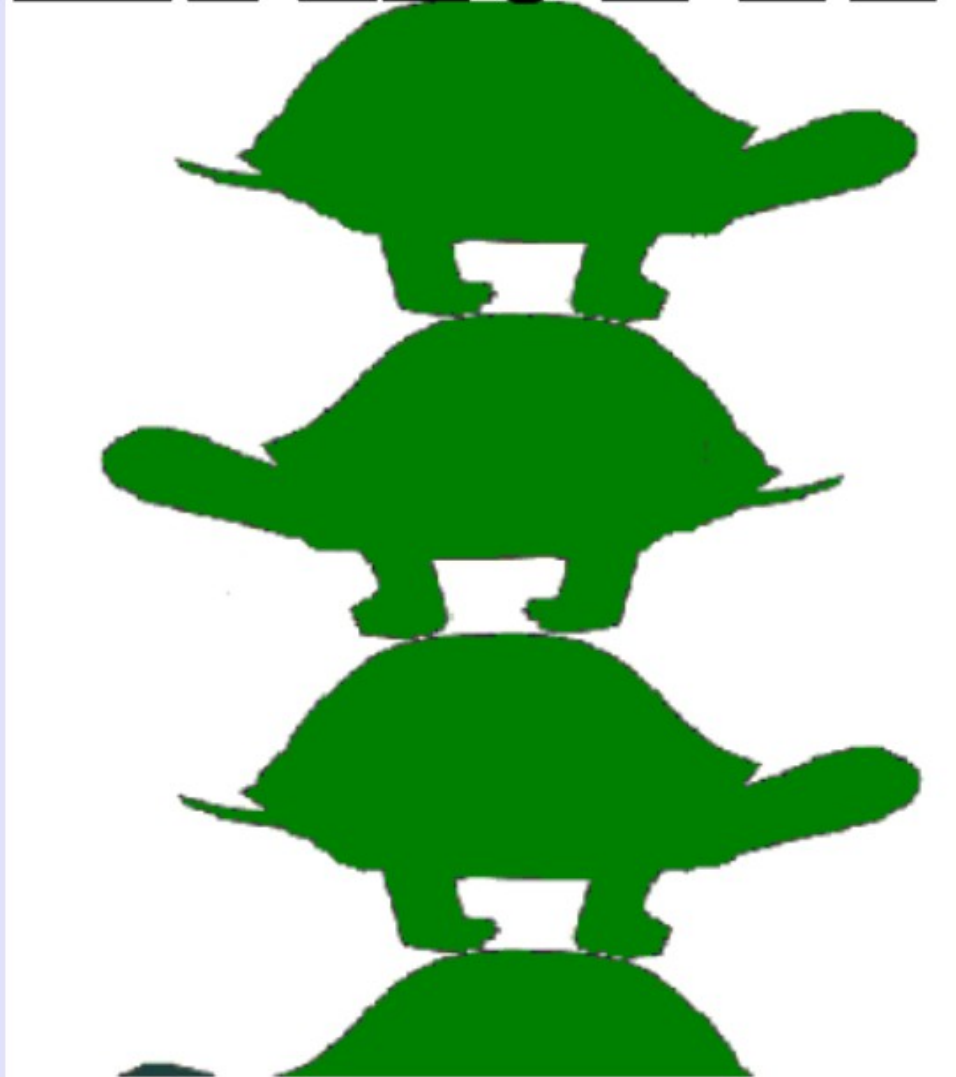
The context for human development is always a culture, never an isolated technology. --Seymour Papert

over 1 million served



Turtles all the way down

EARTH



Learning to learn



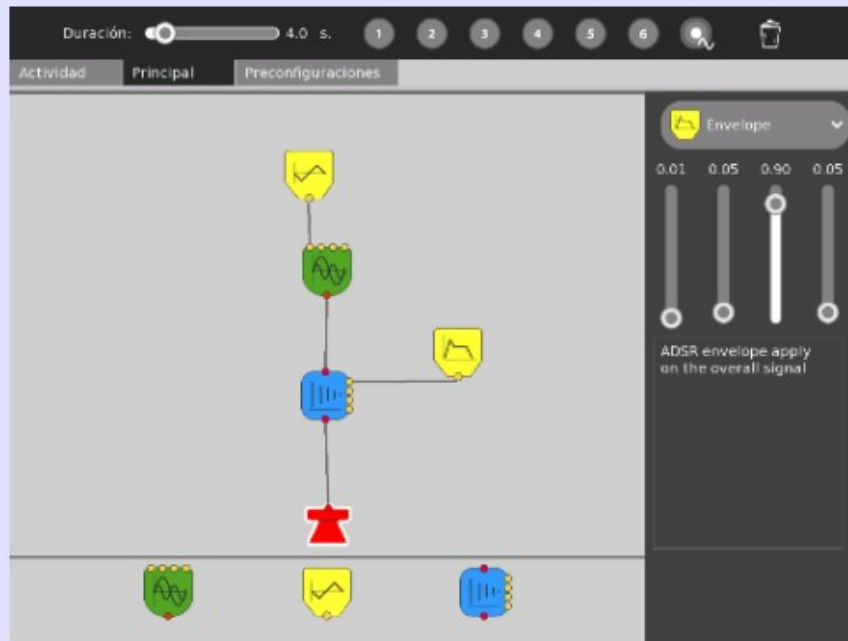
The playfulness of childhood is the most demanding teacher we have. —Marvin Minsky



Love is a better master than
duty.



A creative society

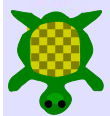


John Dewey
Jean Piaget
Paulo Freire
Maria Montessori
Seymour Papert
Lev Vygotsky
Donald Schön
Alan Kay
Khun Paron

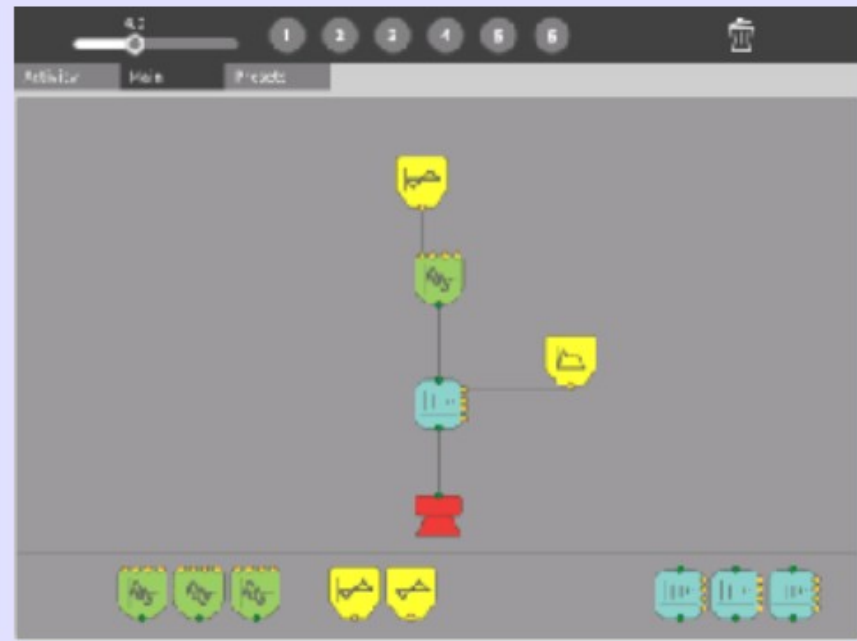
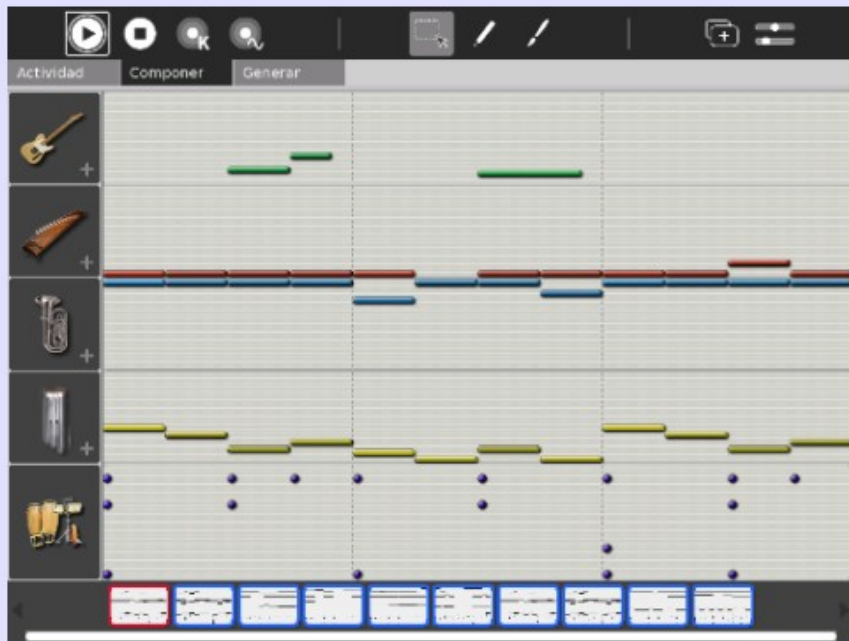
Knowledge is a noun; learning
is a verb.



Guided discovery



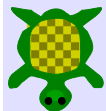
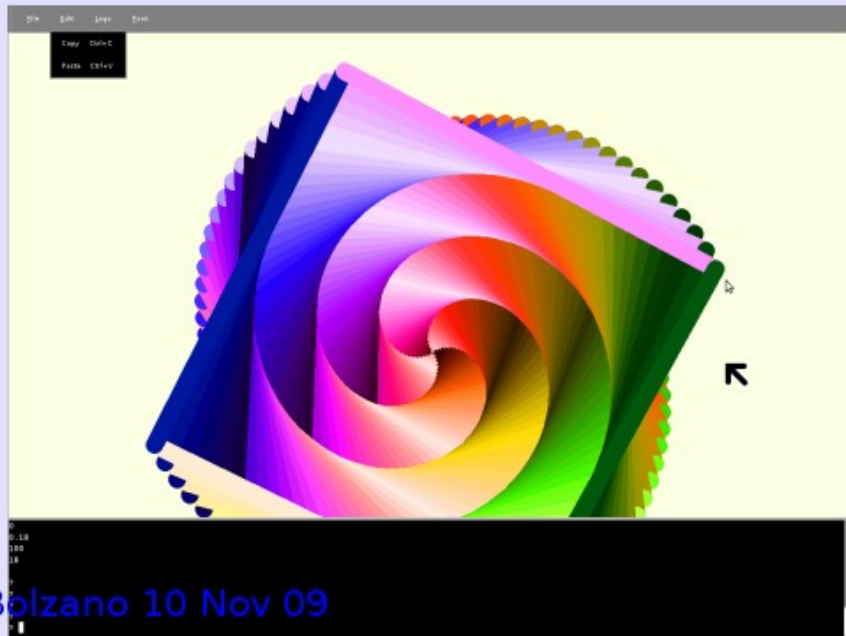
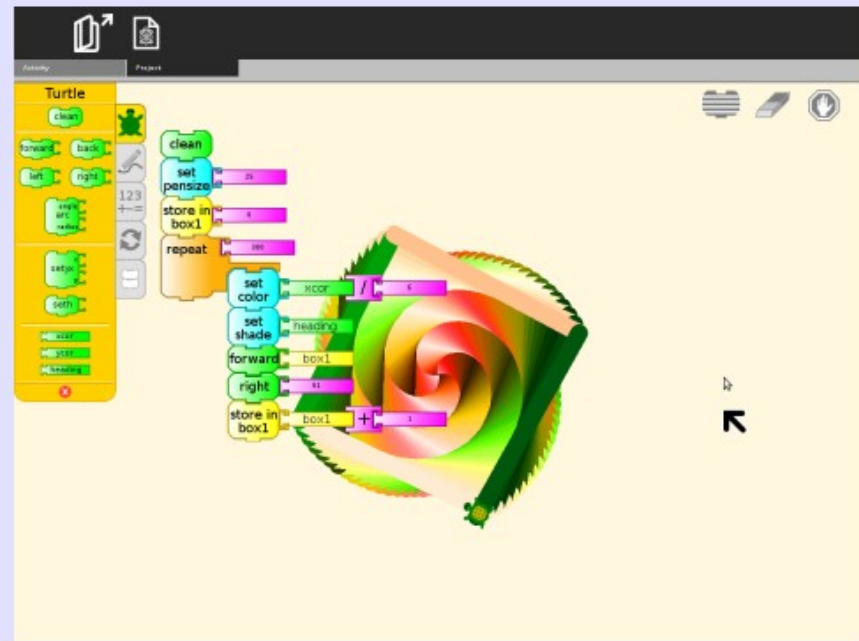
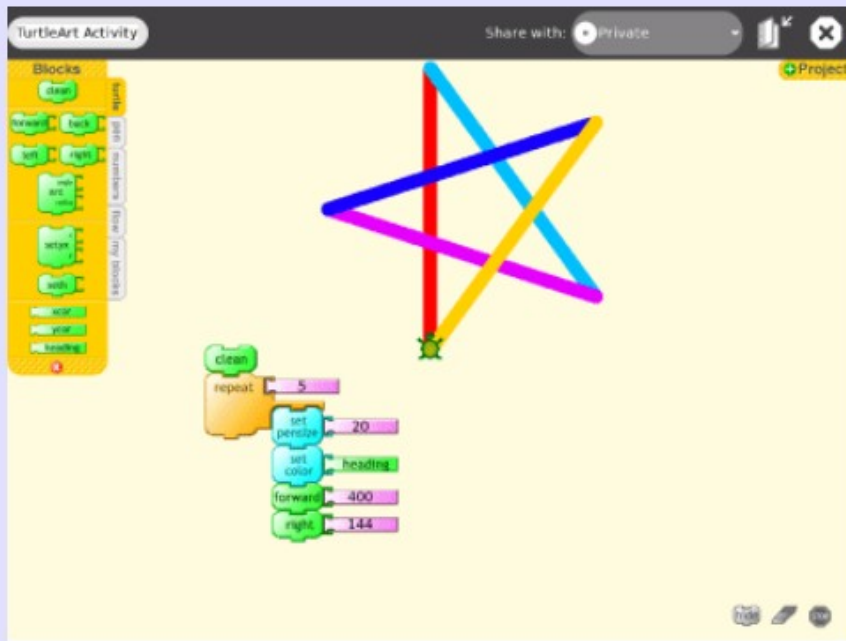
But wait. There is more.



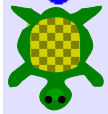
Debugging is one of the most powerful education ideas of the 20th century. -- Cynthia Solomon



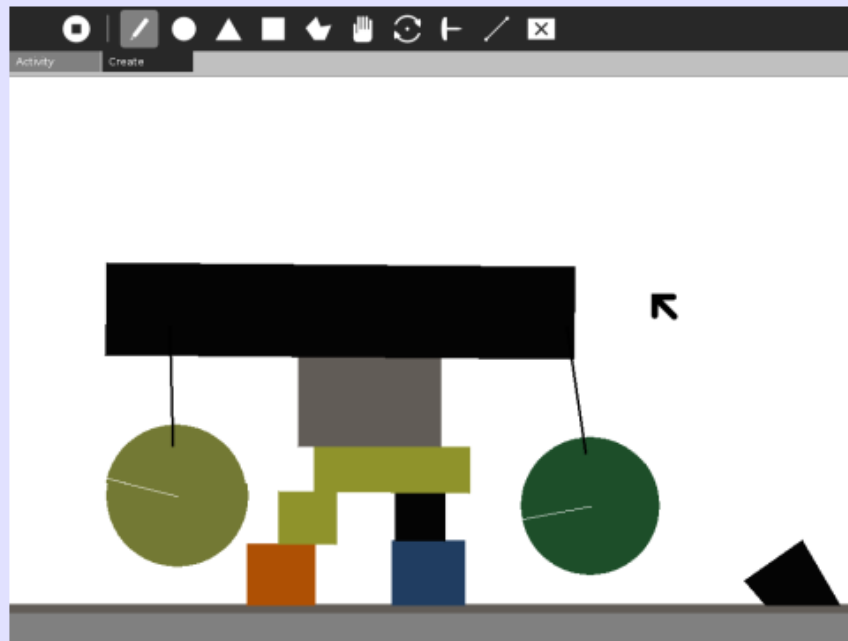
Turtle Art



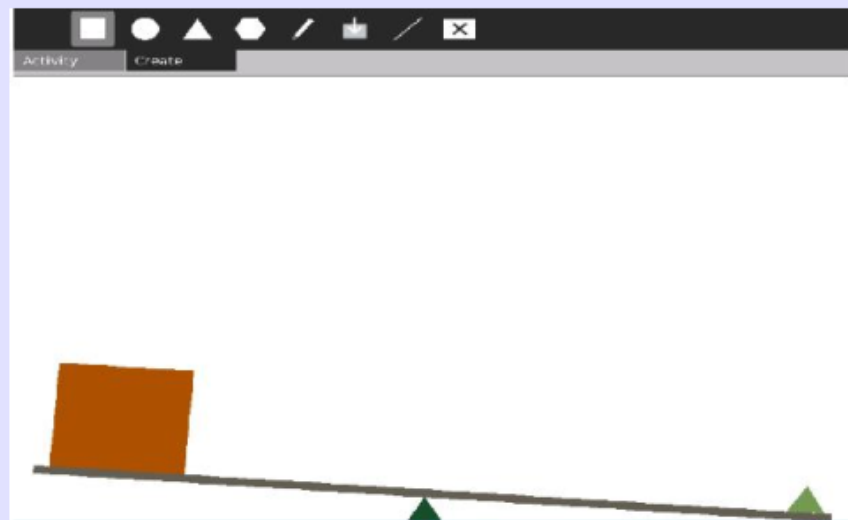
The computer is an
instrument whose music is
ideas. -- Alan Kay



Modifying Physics



I learned how to balance blocks



```
elif event.key == K_h:  
    self.setdensity=10  
elif event.key == K_l:  
    self.setdensity=0.1  
elif event.key == K_n:  
    self.setdensity=1
```

Sugar everywhere



Bolzano 10 Nov 09

sugarlabs

Sugar: It works and it is free...
what are you waiting for?

