

# Why are computer programs so frustrating?

Caitlin Kelleher

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Washington University in St. Louis MM

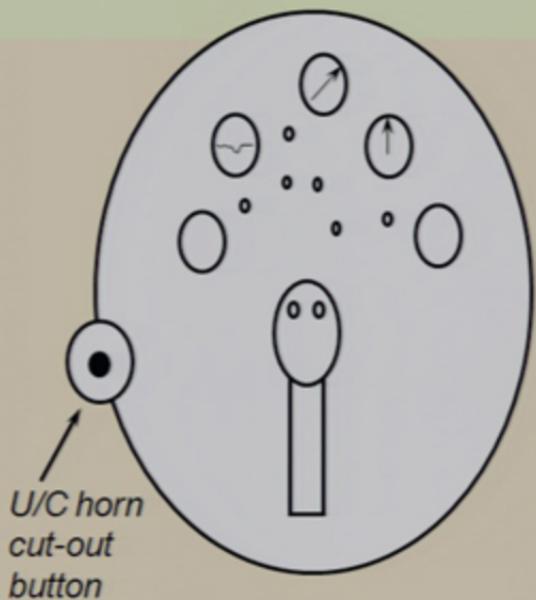
# Harvard Airplane (WWII)



You don't always want  
the landing gear down.



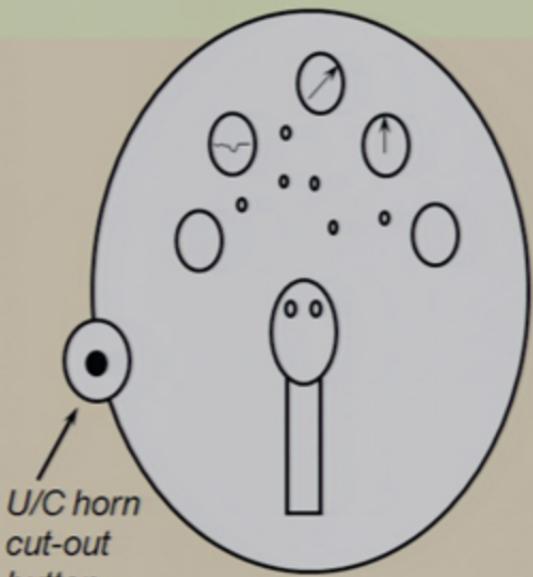
# The Harvard Control Panel



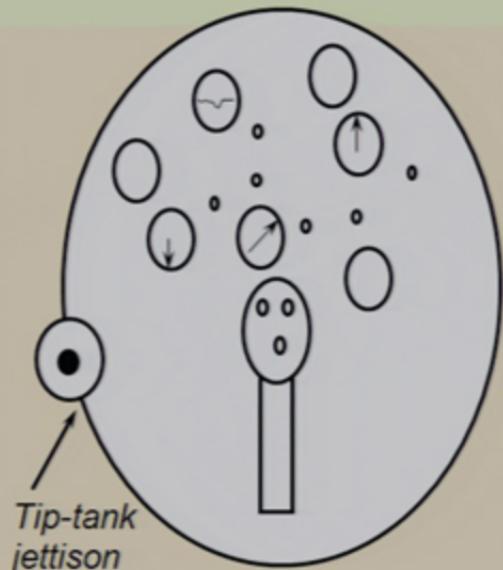
Problem #1: Conditioned response

stall -> push button; therefore stimulus nullified

The Harvard Control Panel



The T-33 Control Panel



Problem #2: Negative transfer

T-33's: tip-tank jettison button in same location



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Who's fault was it that these  
planes crashed?



# What makes a great hammer?



Efficiency: It  
can drive in  
nails faster.



# What makes a great hammer?

Make the head move faster by lengthening the handle.



Make the head heavier



Eventually, you end up with a hammer than no human can lift.

Do you blame the human?



Instead of blaming your user,  
build a better tool.



You can't just build it the way  
you that makes sense to you.

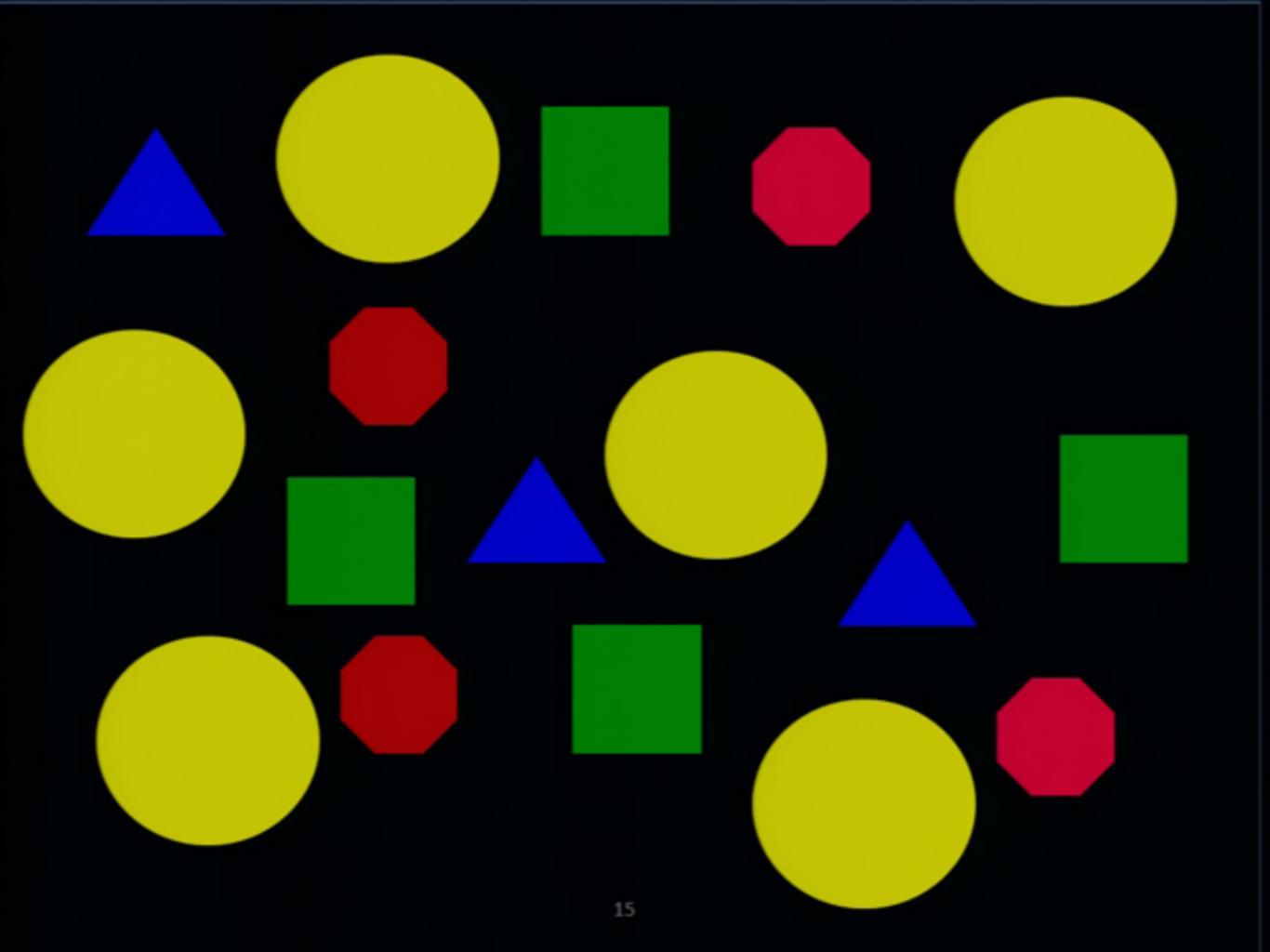


# Quick Test...



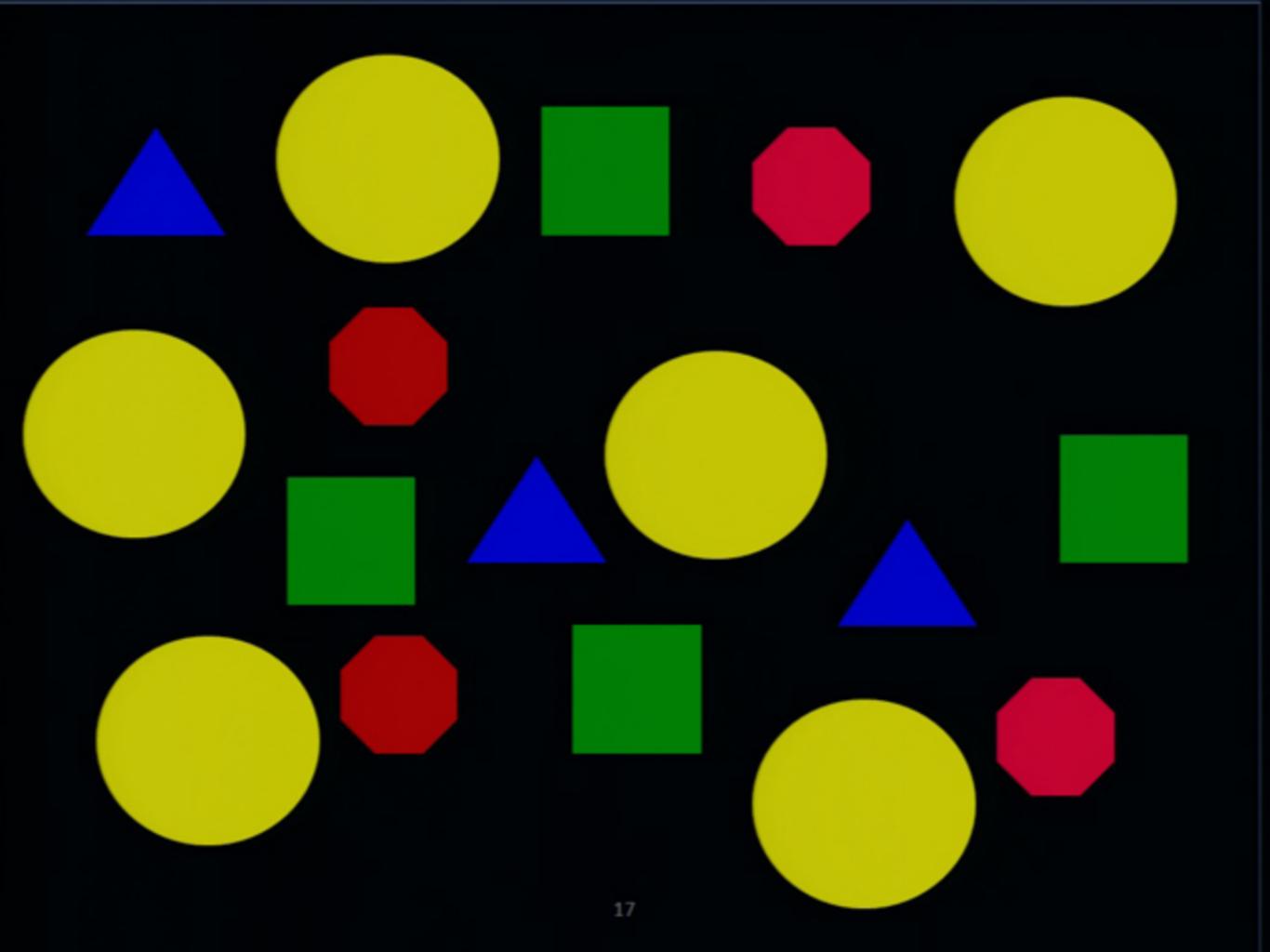
Count the green squares...you  
will have three seconds...





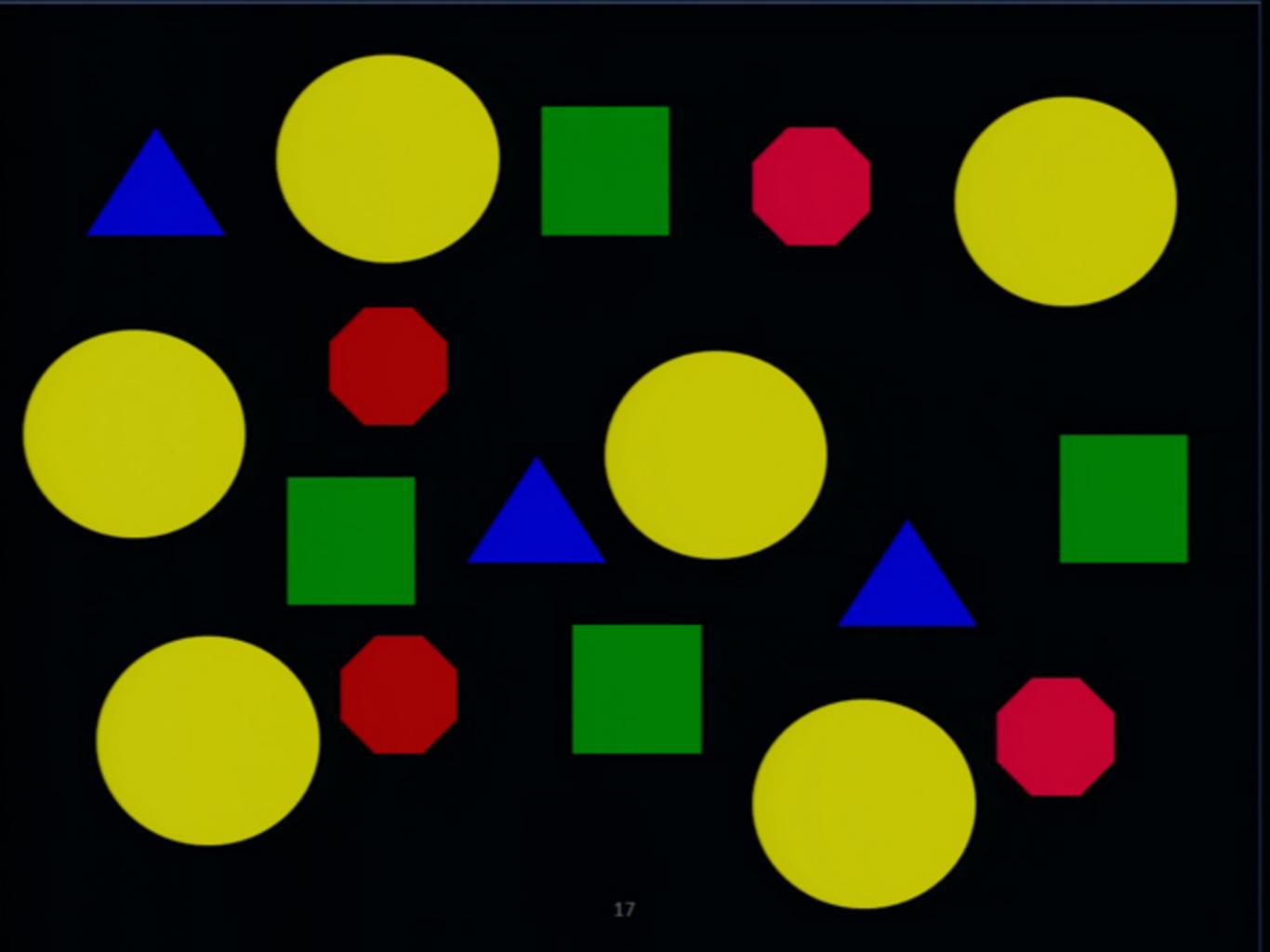
# How many were there?



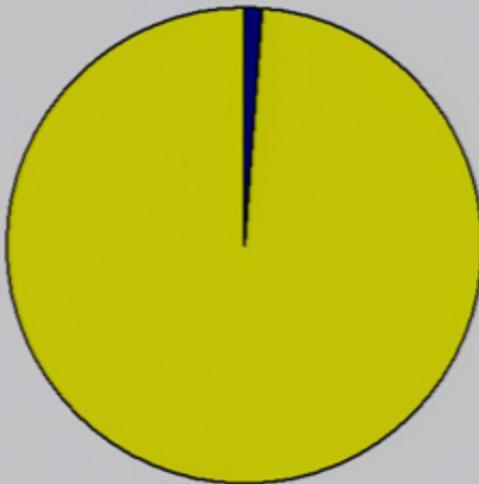


# You are here.





# You are here.



# Ever felt this way?



What works for you may not  
work for others.



To make software that works for  
real people, you have to get  
inside the heads of real people.





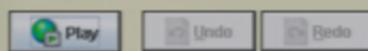
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# Storytelling Alice Demo

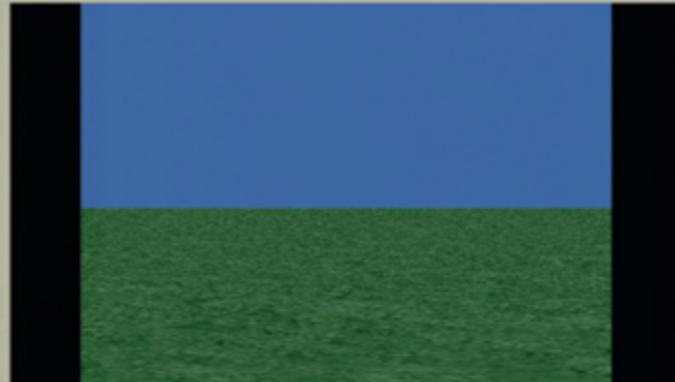
Warning: This demo shows cartoon  
characters kissing





## Objects done adding objects

- World
- Camera
- Light
- ground
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)

## World's details

[properties](#) [methods](#) [functions](#)

scene 1 method [edit](#)

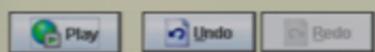
[create new method](#)



[Home](#) > Local Gallery > characters

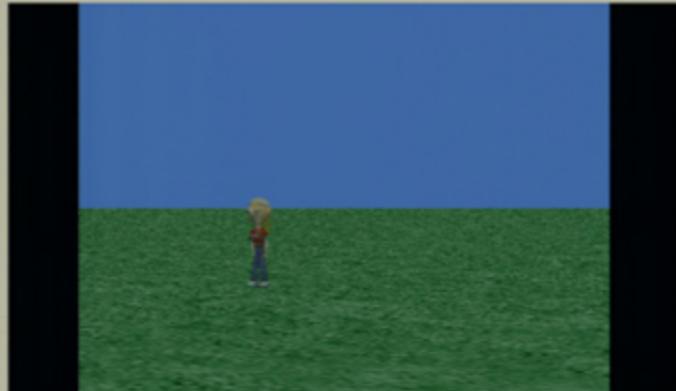
[Search Gallery](#)





## Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)

## World's details

[properties](#) [methods](#) [functions](#)

scene 1 method [edit](#)

[create new method](#)



[Home](#) > [Local Gallery](#) > [characters](#) > kids

[Search Gallery](#)

Kayla: Modeled by Moshe Mahler, Painted by Moshe Mahler

Class  
Joey



on your computer

Class  
Kayla



on your computer

Class  
Kristen



on your computer

Class  
Lana



on your computer

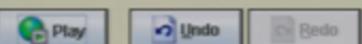
Class  
Leon



on your computer

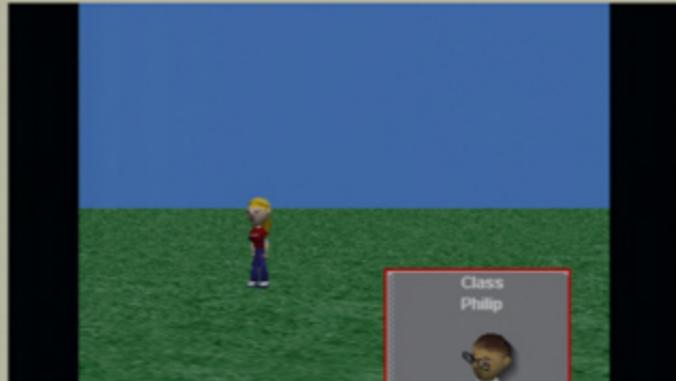


File Edit Tools Help



## Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- Camera Tripods



single view  quad view

Move Objects Freely

 affect subparts

more controls &gt;&gt;

## World's details

properties methods functions

scene 1 method edit

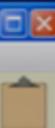
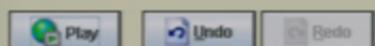
create new method



Home &gt; Local Gallery &gt; characters &gt; kids

Search Gallery

philip	Class Lana	Class Leon	Class Melly	Class Philip	Class Sparky
ter	 on your computer	 on your computer	 on your computer	 on your computer	 on your computer



## Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)

## World's details

[properties](#) [methods](#) [functions](#)

scene 1 method [edit](#)

[create new method](#)



[Home](#) > Local Gallery > characters > kids



Search Gallery

philip



on your computer



on your computer



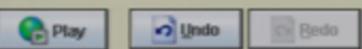
on your computer



on your computer



on your computer



## Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)

## World's details

[properties](#) [methods](#) [functions](#)

scene 1 method [edit](#)

[create new method](#)



[Home](#) > [Local Gallery](#) > [characters](#) > [kids](#)

[Search Gallery](#)

philip



on your computer



on your computer



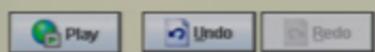
on your computer



on your computer



on your computer



## Objects done adding objects

- World**
- Camera
- Light
- ground
- christen
- philip
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)

## World's details

[properties](#) [methods](#) [functions](#)

[scene 1 method](#) [edit](#)

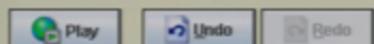
[create new method](#)



[Home](#) > [Local Gallery](#) > [characters](#) > [kids](#)

[Search Gallery](#)





## Objects done adding objects

- World
- Camera
- Light
- ground
- kristen
- philip
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)



## World's details

[properties](#) [methods](#) [functions](#)

[scene 1 method](#) [edit](#)

[create new method](#)



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[Search Gallery](#)



File Edit Tools Help



Objects done adding objects

World

Camera

Light

ground

kristen

philip

Camera Tripods

## World's details

properties methods functions

scene 1 method edit

create new method


 single view
  quad view

Move Objects Freely

 affect subparts

more controls &gt;&gt;



Home &gt; Local Gallery &gt; characters &gt; adults

Search Gallery

Class Coach



on your computer

Class JoeMeanie



on your computer

Class Little red



on your computer

Class LunchLady



on your computer

Class Magician



on yo

start



C:\Documents and Se...

Microsoft PowerPoint ...

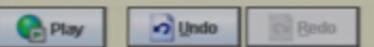
Alice (Storytelling Alic...



10:01 AM



File Edit Tools Help



### Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Lunchlady
- Cafeteria
- Camera Tripods

### World's details

properties methods functions

scene 1 method edit

create new method



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)



[Home](#) > Local Gallery > scenes > cafeteria

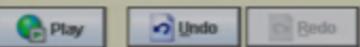
[Search Gallery](#)

Cafeteria: Modeled by Moshe Mahler, Painted by Moshe Mahler





File Edit Tools Help



## Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Lunchlady
- Cafeteria
- Camera Tripods



single view  quad view

Move Objects Freely

 affect subparts

more controls &gt;&gt;



## World's details

**properties** methods **functions**

scene 1 method edit

create new method

Home &gt; Local Gallery &gt; scenes &gt; cafeteria

Search Gallery

Cafeteria: Modeled by Moshe Mahler, Painted by Moshe Mahler

Class  
CafeChair

on your computer

Class  
CafeTableLong

on your computer

Class  
Cafeteria

on your computer

start



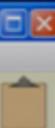
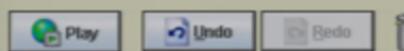
C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...



10:01 AM



## Objects done adding objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Lunchlady
- Cafeteria
- Camera Tripods



single view  quad view

Move Objects Freely



affect subparts

[more controls >>](#)



## World's details

[properties](#) [methods](#) [functions](#)

scene 1 method [edit](#)

[create new method](#)

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[Search Gallery](#)

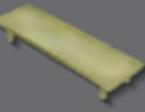
Cafeteria: Modeled by Moshe Mahler, Painted by Moshe Mahler

Class  
CafeChair



on your computer

Class  
CafeTableLong

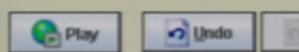


on your computer

Class  
Cafeteria



on your computer



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Lunchlady
- Cafeteria
- Camera Tripods

## philip's details

properties methods functions

cheer edit

punch who edit

tie shoelace edit

plug ears edit

create new method

philip say

philip think

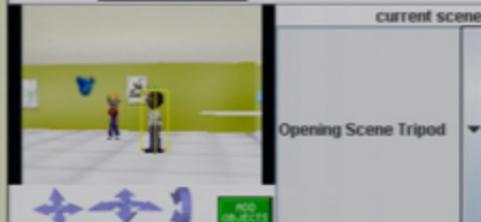
philip play sound

philip walk to

philip walk offscreen

philip walk

## Scenes create new scene



## Events create new event

When the world starts , do World.scene 1 method

## World.scene 1 method

New Method

Name: kis

OK Cancel

No variables

philip say Kristen, I love you.... more...

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print



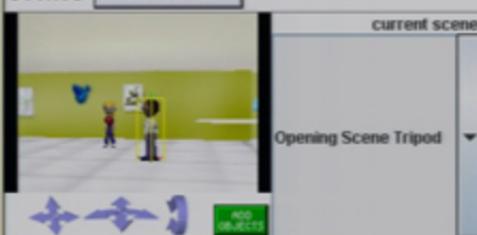
File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- phillip
- Lunchlady
- Cafeteria
- Camera Tripods

## Scenes create new scene



current scene:

Opening Scene Tripod

## World.scene 1 method

## phillip.kiss

World.scene 1 method

## Events create new event

When the world starts , do World.scene 1 method

## philip's details

## properties methods functions

cheer edit

punch who edit

tie shoelace edit

plug ears edit

kiss edit

create new method

philip say

philip think

philip play sound

philip walk to

philip walk offscreen

create new parameter

create new variable

philip.kiss No parameters

No variables

(Do Nothing)

Do in order   Do together   If/Else   Loop   While   For all in order   For all together   Wait   print



## Objects add new objects

World

Camera

Light

ground

kristen

philip

LunchLady

Cafeteria

Camera Tripods

## philip's details

## properties methods functions

cheer edit

punch who edit

tie shoelace edit

plug ears edit

kiss edit

create new method

philip say

philip think

philip play sound

philip walk to

philip walk offscreen

## Scenes create new scene

current scene:

Opening Scene Tripod



ADD OBJECTS

World.scene 1 method

philip.kiss

World.scene 1 method

philip.kiss No parameters

create new parameter

No variables

create new variable

(Do Nothing)

target

the entire World

group

kristen

philip

LunchLady

Cafeteria

Camera

Light

Camera Tripods

expressions

Do in order

Do together

While

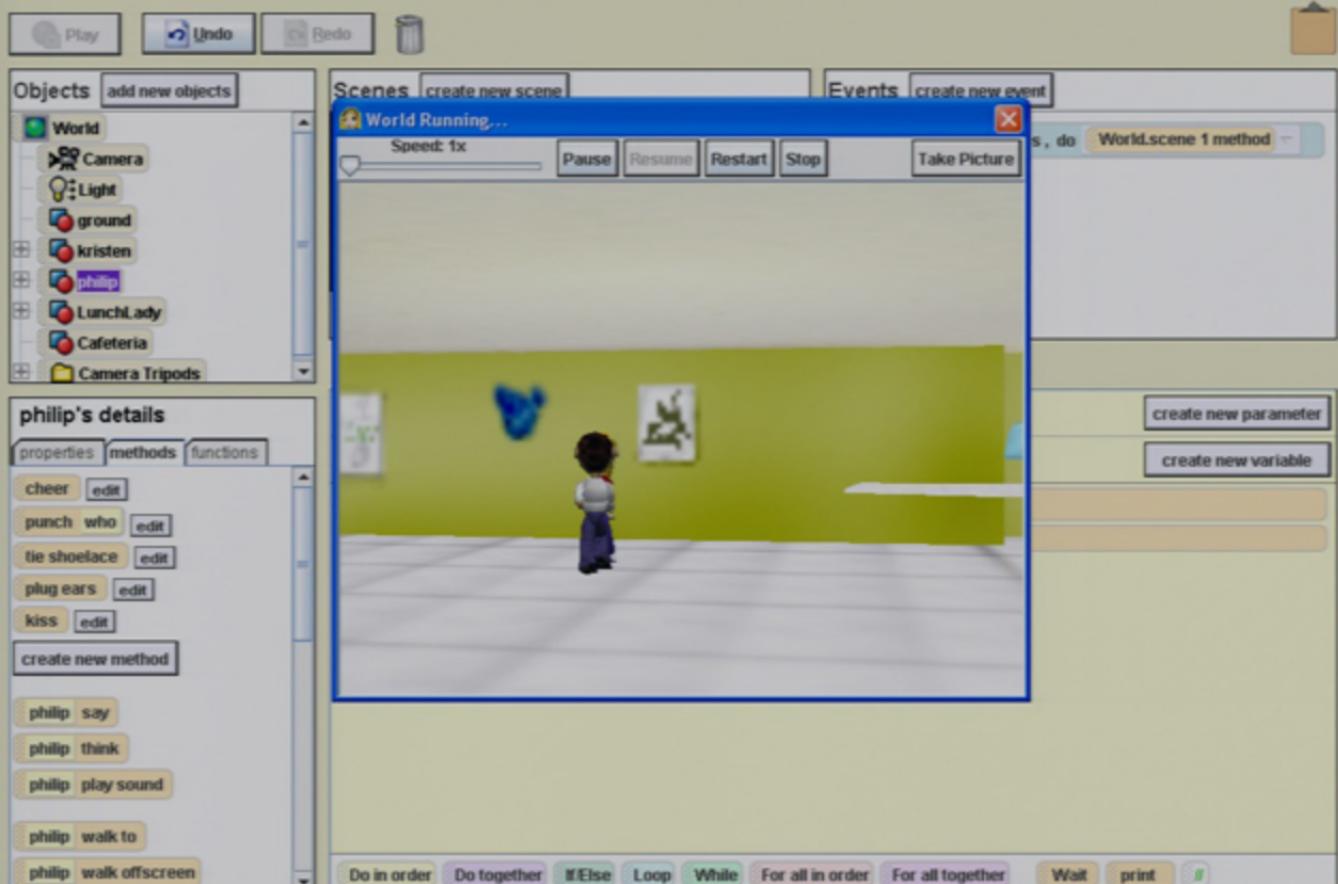
For all in order

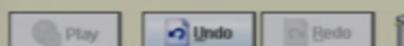
For all together

Wait

print







## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- Lunchlady
- Cafeteria
- Camera Tripods

## philip's details

properties methods functions

- cheer edit
- punch who edit
- tie shoelace edit
- plug ears edit
- kiss edit

create new method

- philip say
- philip think
- philip play sound
- philip walk to
- philip walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

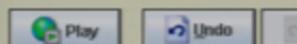
Take Picture



create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

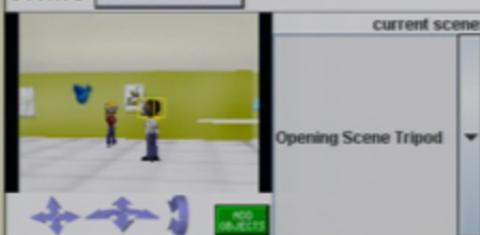


## Objects add new objects

Objects list:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
  - neck
  - head
  - rightUpperArm

## Scenes create new scene



## Events create new event

When the world starts , do World.scene 1 method

## head's details

properties methods functions

head turn

head roll

head straighten up

head move

head resize

## Seldom Used Methods

World.scene 1 method   philip.kiss

create new parameter

No variables

create new variable

philip walk to kristen amount = 0 more...

Do together

philip touch kristen side = left more...

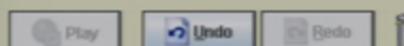
philip touch kristen side = right limb = leftArm more...

Loop 2 times times show complicated version

philip.hips.lowerTorso.upperTorso.neck.head roll left 0.1 revolutions more...

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

Do in order Do together If/Else Loop While For all in order For all together Wait print



## Objects add new objects

Objects tree:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## head's details

[properties](#) [methods](#) [functions](#)

[head turn](#)

[head roll](#)

[head straighten up](#)

[head move](#)

[head resize](#)

## Seldom Used Methods

## Scenes create new scene

## World Running...

Speed: 1x

[Pause](#)

[Resume](#)

[Restart](#)

[Stop](#)

[Take Picture](#)



Events create new event

World.scene 1 method

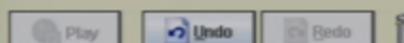
[create new parameter](#)

[create new variable](#)

more...

phillip.hips.lowerTorso.upperTorso.neck.head roll right - 0.1 revolutions more...

Do in order Do together If/Else Loop While For all in order For all together Wait print



## Objects add new objects

Objects list:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## head's details

[properties](#) [methods](#) [functions](#)

[head turn](#)

[head roll](#)

[head straighten up](#)

[head move](#)

[head resize](#)

## Seldom Used Methods

## Scenes create new scene

## World Running...

Speed: 1x

[Pause](#)

[Resume](#)

[Restart](#)

[Stop](#)

[Take Picture](#)



[create new parameter](#)

[create new variable](#)

philip.hips.lowerTorso.upperTorso.neck.head [roll right](#) [0.1 revolutions](#) [more...](#)

[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#) [Wait](#) [print](#)

Alice (Storytelling Alice 10/01/2007) - [Modified]

File Edit Tools Help

Play Undo Redo

Objects add new objects

Scenes create new scene

Events create new event

X

World Running... Speed: 1x Pause Resume Restart Stop Take Picture

Kristen

philip

hips

lowerTorso

upperTorso

neck

head

rightUpperArm

head's details

properties methods functions

head turn

head roll

head straighten up

head move

head resize

Seldom Used Methods

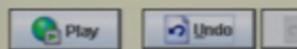
create new parameter

create new variable

phillip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

Do in order Do together If/Else Loop While For all in order For all together Wait print

The screenshot shows the Alice 3D modeling software interface. In the center, a character named "philip" is standing in a room with a yellow wall and a white floor. He is wearing a blue shirt and purple pants. A floating command palette in the foreground displays the command "phillip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...". On the left, the "Objects" panel lists characters "Kristen" and "philip", with "philip" expanded to show its body parts: "hips", "lowerTorso", "upperTorso", "neck", "head", and "rightUpperArm". Below this, the "head's details" panel shows methods like "turn", "roll", "straighten up", "move", and "resize". At the bottom, a toolbar offers options like "Do in order", "Do together", "If/Else", "Loop", "While", "For all in order", "For all together", "Wait", and "print". The top menu bar includes "File", "Edit", "Tools", and "Help".

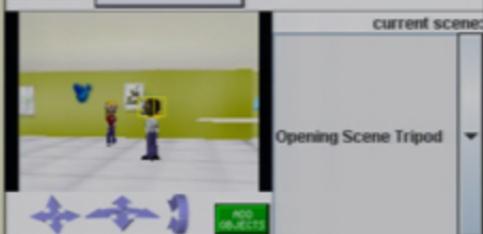


## Objects add new objects

Objects tree:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## Scenes create new scene



## Events create new event

When the world starts , do World.scene 1 method

## head's details

[properties](#) [methods](#) [functions](#)

[head turn](#)  
[head roll](#)  
[head straighten up](#)

[head move](#)  
[head resize](#)

[Seldom Used Methods](#)

[World.scene 1 method](#) [philip.kiss](#)

[create new parameter](#)

No variables

[create new variable](#)

philip walk to kristen amount = 0 more...

Do together

philip touch kristen side = left more...

philip touch kristen side = right limb = leftArm more...

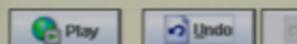
Loop 2 times

times show complicated version

philip.hips.lowerTorso.upperTorso.neck.head roll left 0.1 revolutions more...

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#) [Wait](#) [print](#) [?](#)



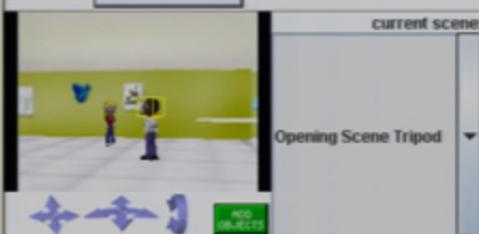
## Objects add new objects

Kristen

philip

- hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## Scenes create new scene



## Events create new event

When the world starts , do World.scene 1 method

## head's details

[properties](#) [methods](#) [functions](#)

head turn

head roll

head straighten up

head move

head resize

## Seldom Used Methods

[World.scene 1 method](#) [philip.kiss](#)
[create new parameter](#)

No variables

[create new variable](#)

philip walk to kristen amount = 0 more...

## Do together

philip touch kristen side = left more...

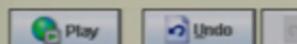
philip touch kristen side = right limb = leftArm more...

## Loop 2 times times show complicated version

philip.hips.lowerTorso.upperTorso.neck.head roll left 0.1 revolutions more...

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

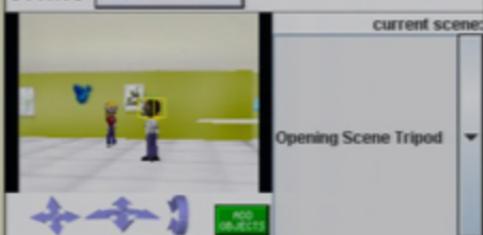
[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#) [Wait](#) [print](#)



## Objects add new objects

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
  - neck
  - head
  - rightUpperArm

## Scenes create new scene



## Events create new event

When the world starts , do World.scene 1 method

## head's details

[properties](#) [methods](#) [functions](#)
[head turn](#)  
[head roll](#)  
[head straighten up](#)
[head move](#)  
[head resize](#)
[Seldom Used Methods](#)

World.scene 1 method

philip.kiss

[create new parameter](#)[create new variable](#)

No variables

philip walk to kristen amount = 0 more...

Do together

philip touch kristen side = left more...

Loop

5 times

10 times

infinity times

0.1 times

0 times

expressions &gt;

math &gt;

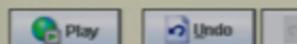
other...

IfElse Loop While For all in order For all together Wait print

[show complicated version](#)

x.upperTorso.neck.head roll left 0.1 revolutions more...

x.upperTorso.neck.head roll right 0.1 revolutions more...



## Objects add new objects

Kristen

philip

- hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## head's details

properties methods functions

head turn

head roll

head straighten up

head move

head resize

## Seldom Used Methods

## Scenes create new scene

current scene



World.scene

philip.kiss No p

No variables

philip - walk

Do together

philip

philip

Loop 2 time

philip.hips.lowerTorso.upperTorso.neck.head

roll right

0.1 revolutions

more...

## Events create new event

When the world starts , do World.scene 1 method

Custom Number

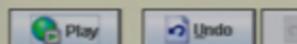
7	8	9	←
4	5	6	Clear
1	2	3	±
0	.	/	

Okay Cancel

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

Do in order Do together If/Else Loop While For all in order For all together Wait print

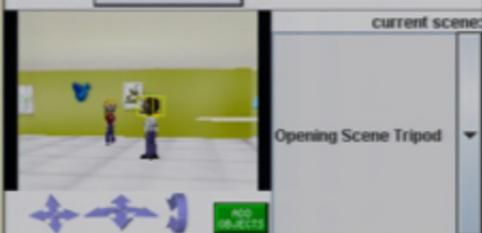


## Objects add new objects

Objects list:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
  - neck
  - head
  - rightUpperArm

## Scenes create new scene



## Events create new event

When the world starts , do World.scene 1 method

## head's details

properties methods functions

head turn  
head roll  
head straighten up

head move  
head resize

## Seldom Used Methods

World.scene 1 method philip.kiss

create new parameter

No variables

create new variable

philip walk to kristen amount = 0 more...

## Do together

philip touch kristen side = left more...

philip touch kristen side = right limb = leftArm more...

## Loop 4 times times show complicated version

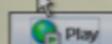
philip.hips.lowerTorso.upperTorso.neck.head roll left 0.1 revolutions more...

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

Do in order Do together If/Else Loop While For all in order For all together Wait print



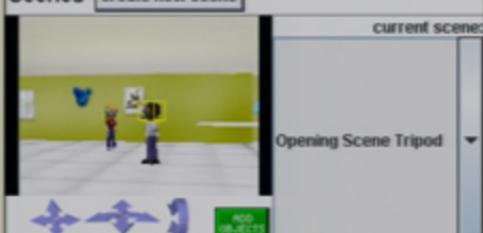
File Edit Tools Help



### Objects [add new objects](#)

- ⊕ Kristen
- ⊕ philip
  - ⊕ hips
  - ⊕ lowerTorso
  - ⊕ upperTorso
    - ⊕ neck
    - ⊕ head
  - ⊕ rightUpperArm

### Scenes [create new scene](#)



### Events [create new event](#)

When the world starts , do [World.scene 1 method](#)

### head's details

[properties](#) [methods](#) [functions](#)

head turn

head roll

head straighten up

head move

head resize

### ⊕ Seldom Used Methods

[World.scene 1 method](#) [philip.kiss](#)

[create new parameter](#)

No variables

[create new variable](#)

philip walk to kristen amount = 0 more...

Do together

philip touch kristen side = left more...

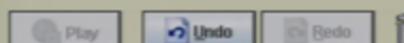
philip touch kristen side = right limb = leftArm more...

Loop 4 times times show complicated version

philip.hips.lowerTorso.upperTorso.neck.head roll left 0.1 revolutions more...

philip.hips.lowerTorso.upperTorso.neck.head roll right 0.1 revolutions more...

[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#) [Wait](#) [print](#) [?](#)



## Objects add new objects

Objects tree:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## head's details

[properties](#) [methods](#) [functions](#)

[head turn](#)

[head roll](#)

[head straighten up](#)

[head move](#)

[head resize](#)

## Seldom Used Methods

## Scenes create new scene

## World Running...

Speed: 1x

[Pause](#)

[Resume](#)

[Restart](#)

[Stop](#)

[Take Picture](#)



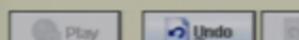
[create new parameter](#)

[create new variable](#)

philip.hips.lowerTorso.upperTorso.neck.head [roll right](#) [0.1 revolutions](#) [more...](#)

[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#) [Wait](#) [print](#)

File Edit Tools Help



## Objects add new objects

Objects tree:

- Kristen
- philip
  - hips
  - lowerTorso
  - upperTorso
    - neck
    - head
  - rightUpperArm

## head's details

[properties](#) [methods](#) [functions](#)

[head turn](#)[head roll](#)[head straighten up](#)[head move](#)[head resize](#)

## Seldom Used Methods

## Scenes create new scene

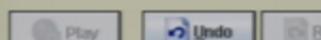
## World Running...

Speed: 1x

[Pause](#)[Resume](#)[Restart](#)[Stop](#)[Take Picture](#)

[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#)

[Wait](#) [print](#)



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- LunchLady
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture

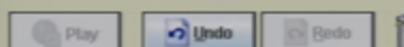


create new parameter

create new variable

head

Do in order Do together If/Else Loop While For all in order For all together Wait print



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- LunchLady
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

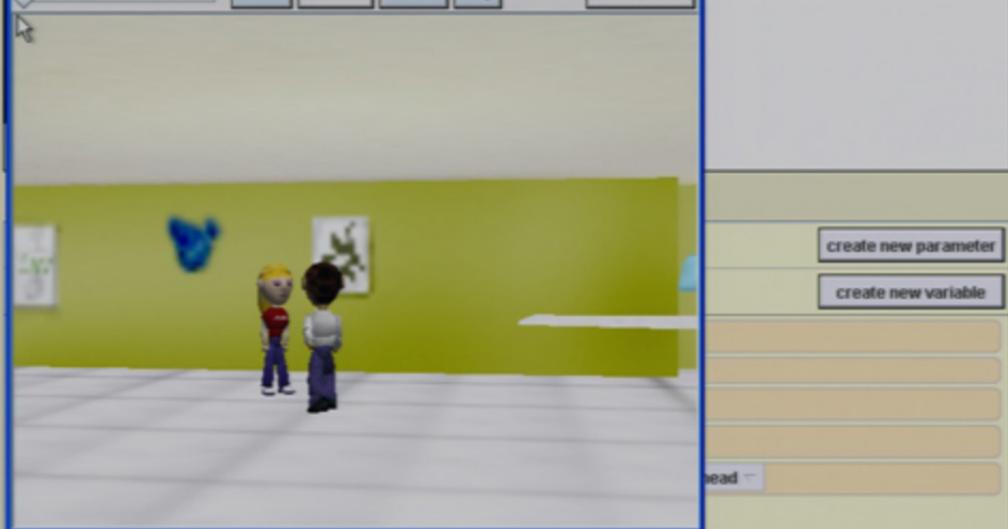
Pause

Resume

Restart

Stop

Take Picture

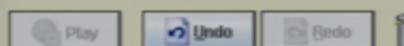


head -

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- lunchlady
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event

World.scene 1 method

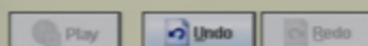
create new parameter

create new variable

head

Do in order Do together If/Else Loop While For all in order For all together Wait print





## Objects add new objects

- World
  - Camera
  - Light
  - ground
- kristen
- philip
- lunchlady
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event

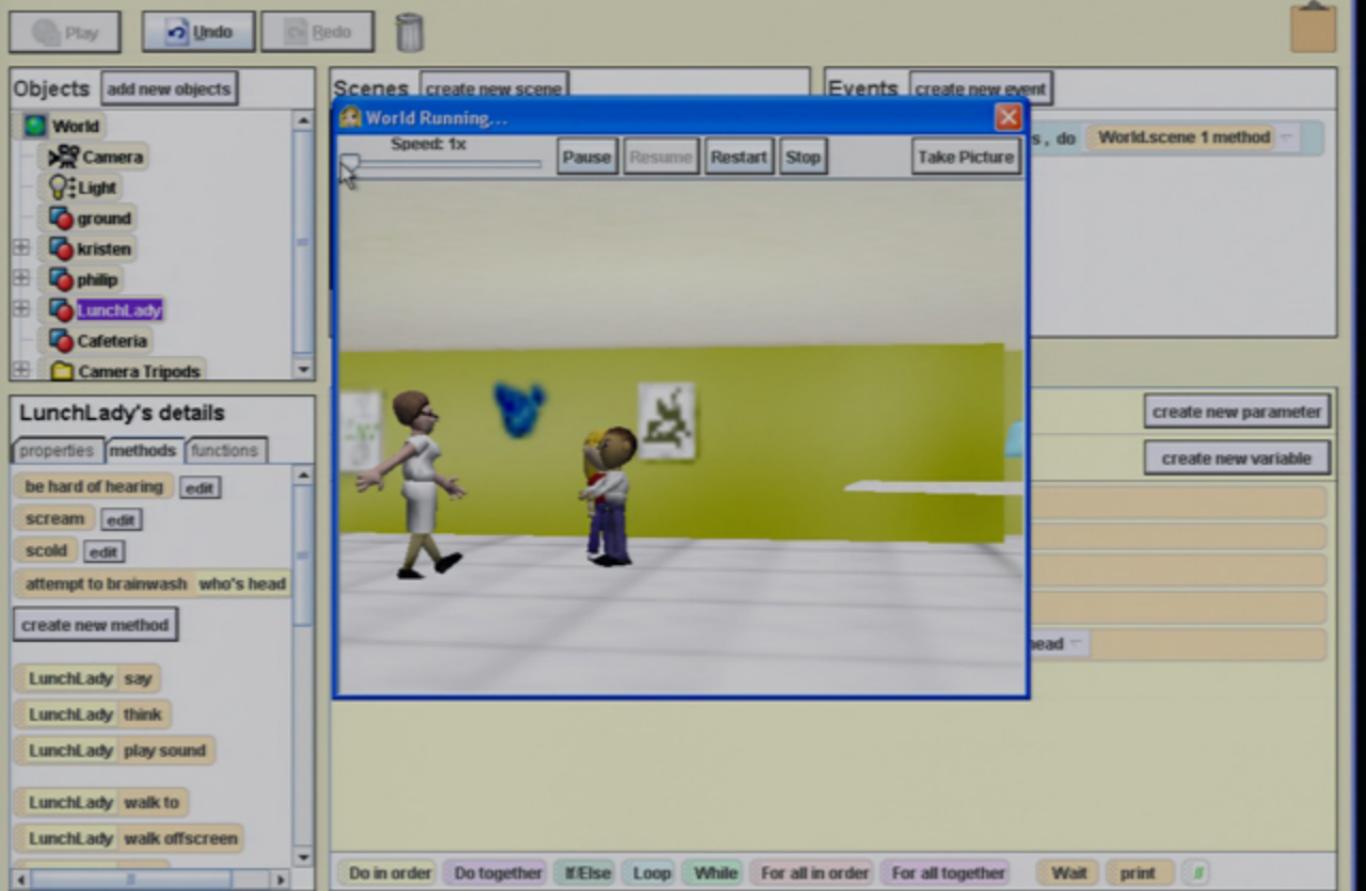
## World.scene 1 method

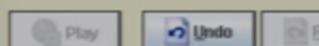
create new parameter

create new variable

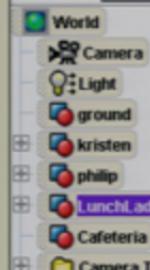
head

Do in order Do together If/Else Loop While For all in order For all together Wait print





## Objects



### LunchLady's details

[properties](#) [methods](#) [functions](#)

be hard of hearing

scream

scold edit

attempt to brainwash who's head

create new method

LunchLady saw

LunchLady think

Lunch lady play sound

Lunch! actv. walk to

Lunch: *arts* walk offscreen

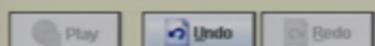
**Scenes** [create new scene](#)



**Do in order**   **Do together**   **If Else**   **Loop**   **While**   **For all in order**   **For all together**

Wait print





## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- LunchLady
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event

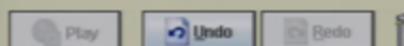
Worldscene 1 method

create new parameter

create new variable

head

Do in order Do together If/Else Loop While For all in order For all together Wait print



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- LunchLady
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



World.scene 1 method

create new parameter

create new variable

head

Do in order Do together If/Else Loop While For all in order For all together Wait print



## Objects add new objects

- World**
- Camera
- Light
- ground
- kristen
- philip
- LunchLady**
- Cafeteria
- Camera Tripods

## LunchLady's details

properties methods functions

be hard of hearing edit

scream edit

scold edit

attempt to brainwash who's head

create new method

LunchLady say

LunchLady think

LunchLady play sound

LunchLady walk to

LunchLady walk offscreen

## Scenes create new scene

World Running...

Speed: 1x

Pause

Resume

Restart

Step

Take Picture



## Events create new event

...

World.scene 1 method

create new parameter

create new variable

head

Do in order Do together If/Else Loop While For all in order For all together Wait print

# Why build Storytelling Alice?

1. Enable kids to build their own animated stories because it's fun.
2. Give more kids a little taste of computer science.

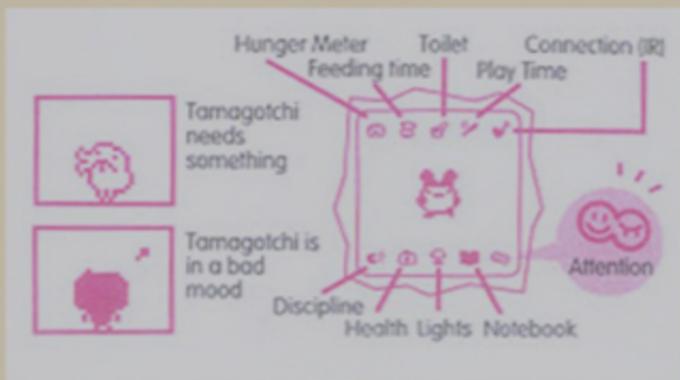
When you build a story or a game in Storytelling Alice, you're using the same kinds of blocks that professional computer scientists use to solve important problems.



# Tamagotchi



# Tamagotchi



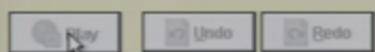
When Tamagotchi needs something, it calls you with a beep and the Attention icon is highlighted. Check what it needs with the Hunger Meter and play, feed or discipline them.



# Caring for a Virtual Dragon



File Edit Tools Help



## Objects add new objects

- World
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



X

Running

ethHungry

typed,

eDragon

create new parameter

create new variable

Do in order

Do together

If/Else

Loop

While

For all in order

For all together

Wait

print

G

start



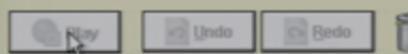
C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:13 AM

File Edit Tools Help



Objects add new objects

- World
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

create new method

Scenes create new scene

World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



running  
ethHungry  
typed,  
eDragon

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



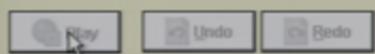
C:\Documents and Se...

Microsoft PowerPoint ...

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File Edit Tools Help



## Objects add new objects

- World
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event



Running

setHungry

typed,

eDragon

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



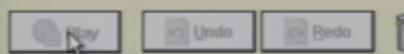
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Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:13 AM

File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event



Running

setHungry

typed,

eDragon

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



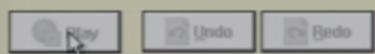
C:\Documents and Se...

Microsoft PowerPoint...

Alice (Storytelling Alic...

10:13 AM

File Edit Tools Help



Objects add new objects

- World
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

create new method

Scenes create new scene

World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



Oh no! Sorin died.

Events create new event



create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



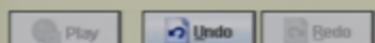
C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:13 AM

File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

turn the plate red edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event

date red

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



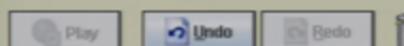
C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:17 AM

File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

turn the plate red edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event

X

date red

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



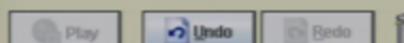
C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:17 AM

File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

- feedTheDragon edit
- updateBugIndex edit
- putBugOnPlate whichBug edit
- turn the plate red edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

**Pause** **Resume** **Restart** **Stop**

**Take Picture**

## Events create new event

date red

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



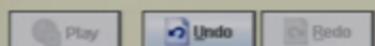
C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:17 AM

File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

turn the plate red edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



X

date red

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



C:\Documents and Se...

Microsoft PowerPoint ...

Alice (Storytelling Alic...

10:17 AM

File Edit Tools Help



## Objects add new objects

- World**
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon updateBugIndex putBugOnPlate whichBug turn the plate red 

## Scenes create new scene

## World Running...

Speed: 1x



date red



start



C:\Documents and Se...

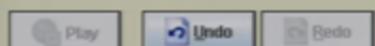
Microsoft PowerPoint ...

Alice (Storytelling Alic...



10:17 AM

File Edit Tools Help



## Objects add new objects

- World
- Camera
- Light
- ground
- dragon
- beetle
- caterpillar
- ladybug
- plate

## World's details

properties methods functions

feedTheDragon edit

updateBugIndex edit

putBugOnPlate whichBug edit

turn the plate red edit

create new method

## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

Stop

Take Picture



## Events create new event

date red

create new parameter

create new variable

Do in order Do together If/Else Loop While For all in order For all together Wait print

start



C:\Documents and Se...

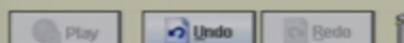
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File Edit Tools Help



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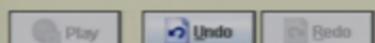
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- [create new method](#)

## Scenes create new scene

## World Running...

Speed: 1x

[Pause](#) [Resume](#) [Restart](#) [Stop](#)

[Take Picture](#)

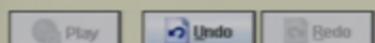
## Events create new event

date red

[create new parameter](#)[create new variable](#)

[Do in order](#) [Do together](#) [If/Else](#) [Loop](#) [While](#) [For all in order](#) [For all together](#) [Wait](#) [print](#)

File Edit Tools Help



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## Scenes create new scene

## World Running...

Speed: 1x

Pause

Resume

Restart

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## Events create new event

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[create new parameter](#)[create new variable](#)

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start



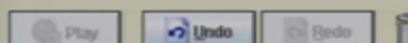
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File Edit Tools Help



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Pause

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X

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create new parameter

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## So, basically...

We watch the dragon's hunger. When it gets larger than a certain value, we tell the user that it's time to feed him (by turning the plate red).

Where else do we have this same problem?



# Monitoring Patients in a Hospital



A simple computer program monitors patient's heart rates, respiratory rates, etc. If they rise or drop to a dangerous level, the programs sounds an alarm to call a nurse or doctor.



As a computer scientist, you can work on problems in almost any field.



# Computer Science and Psychology



Virtual Reality to help treat phobias:  
arachnophobia (spiders), acrophobia (heights), agoraphobia  
(public places), etc.



# Computer Science and Education



Project LISTEN is a reading tutor that uses speech recognition to listen to and help beginning readers.



# Computer Science and Nursing



NurseBot is a project that seeks to develop mobile, personal service robots that assist elderly people suffering from chronic disorders in their everyday life.



# Try it...

- Download Storytelling Alice from  
[www.alice.org](http://www.alice.org)

