

Scratch Programming

June 2013

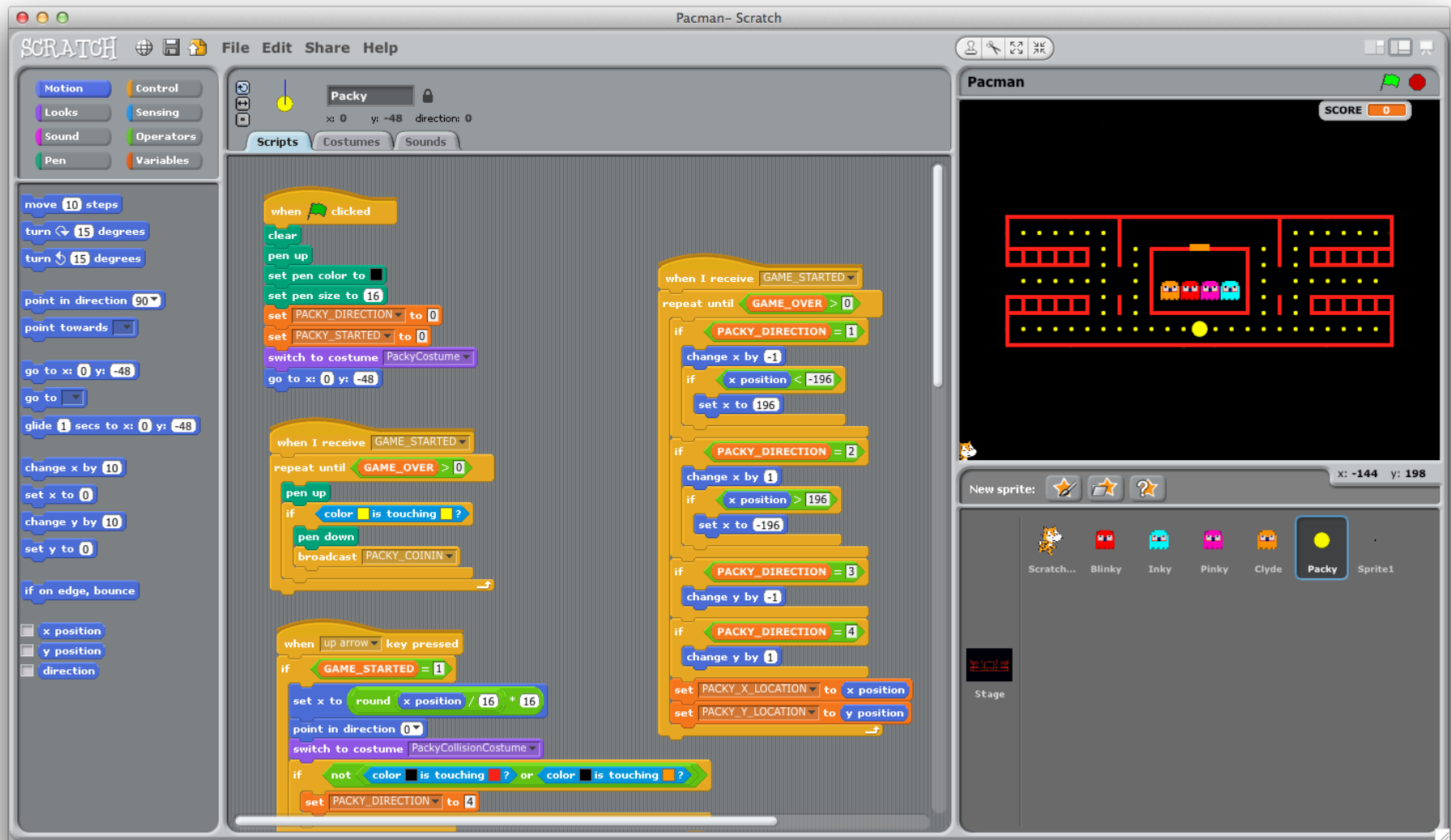
Copyright Acknowledgement

The name PAC-MAN is from the arcade game invented by Namco. Namco owns all copyright.

The name Scratch is from the Lifelong Kindergarten group at the MIT Media Lab. MIT Media Lab owns all copyright.

Resources (costume, sound) for this PAC-MAN game is from A. Olivier/Toru Iwatani. <http://scratch.mit.edu/projects/2345919/>

PAC-MAN



Getting Started (Mac)

Install Scratch 1.4

- <http://download.scratch.mit.edu/MacScratch1.4.dmg>
- Scratch 1.4 should exist under Applications

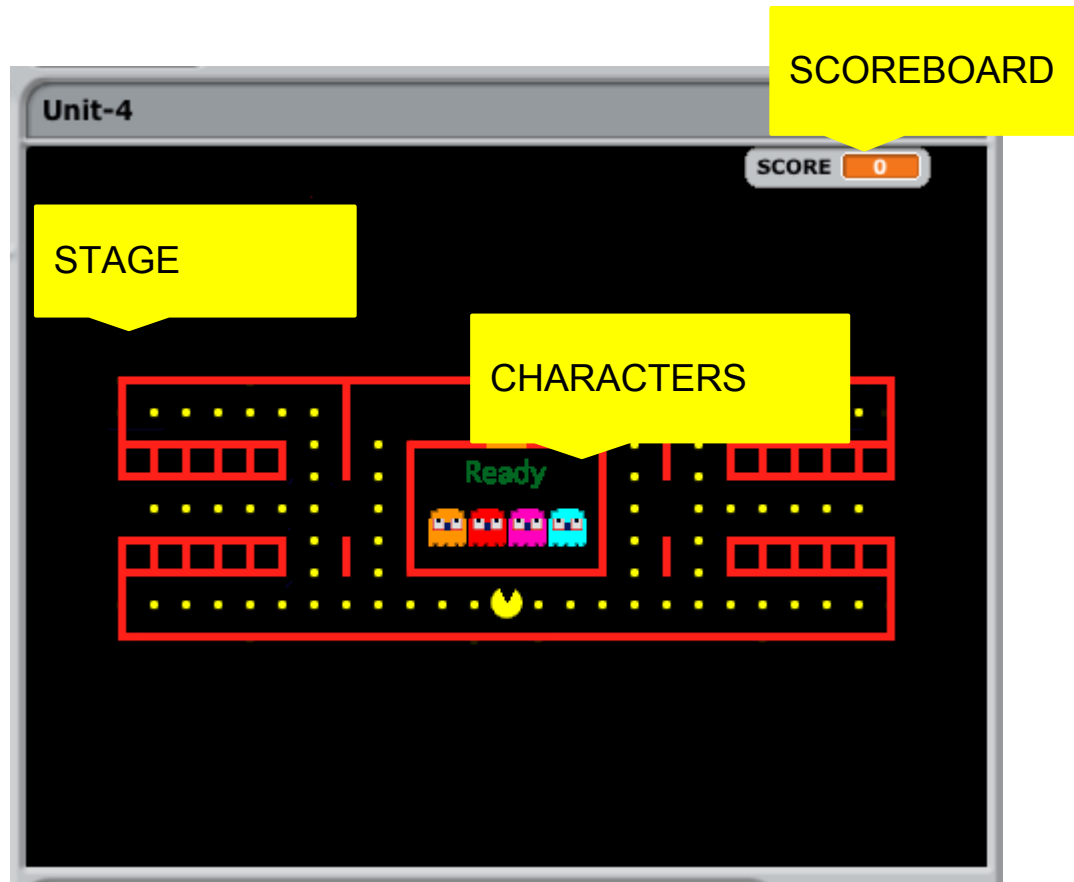
Download pacman.zip

- Unzip pacman.zip into a directory
- Run `setup.sh`

NOW YOU WILL LEARN THE BASIC CONCEPTS OF
SCRATCH PROGRAMMING



GAME WORLD



SPRITES

I AM A SPRITE



BLINKY

SO AM I

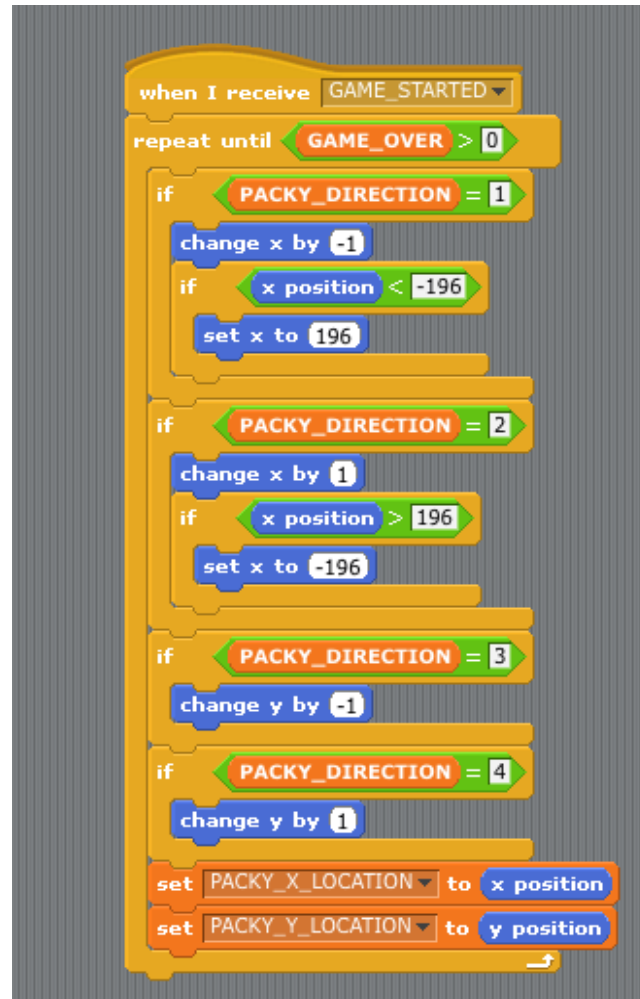


PACKY

BLINKY AND PACKY ARE
SPRITES (AND SO AM I)



SCRIPT

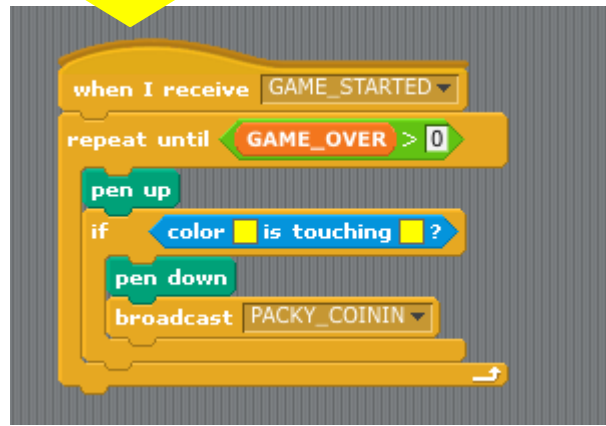


A SCRIPT IS OWNED BY
A SPRITE



GAME LOOP

DOES SOMETHING
REPEATEDLY UNTIL
GAME IS OVER



THE SCRATCH PROGRAM
CONTROLS THE GAME
LOOP

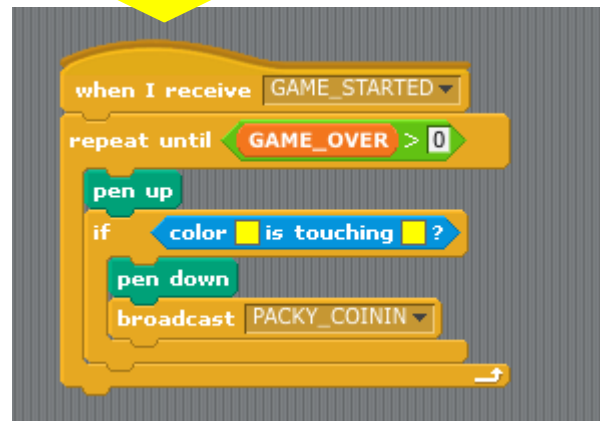


GAME EVENT

THE WHEN FLAG CLICKED
EVENT WAS CREATED BY
SCRATCH



THE GAME_STARTED
EVENT WAS CREATED BY
THE PROGRAMMER



BOTH SCRATCH AND
PROGRAMMER CAN
CREATE GAME EVENTS



EVENT BROADCAST

I WANT TO TELL THE
WORLD THAT I CAUGHT
PACKY



BLINKY

I WANT TO TELL
THE WORLD I
PICKED A COIN



PACKY

BLINKY AND PACKY WANT
TO BROADCAST WHEN
SOME EVENT HAPPENS



VARIABLE

THE SCORE CAN
VARY

SO CAN PACKY's
DIRECTION

BOTH SCRATCH AND
PROGRAMMER CAN
CREATE VARIABLES

600		1	
SCORE		PACKY's DIRECTION	

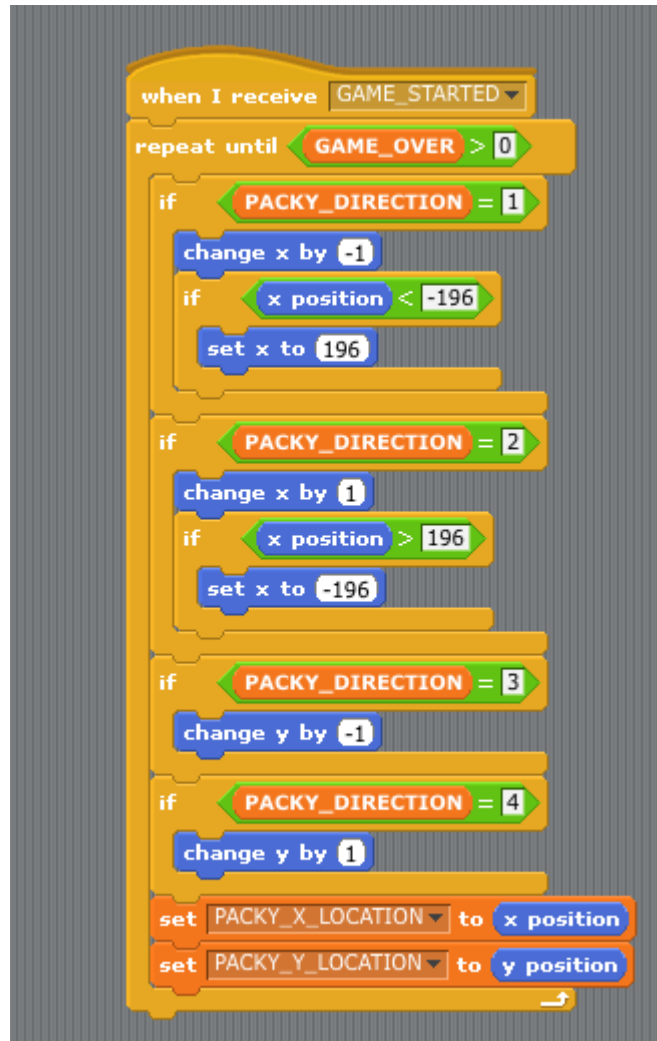
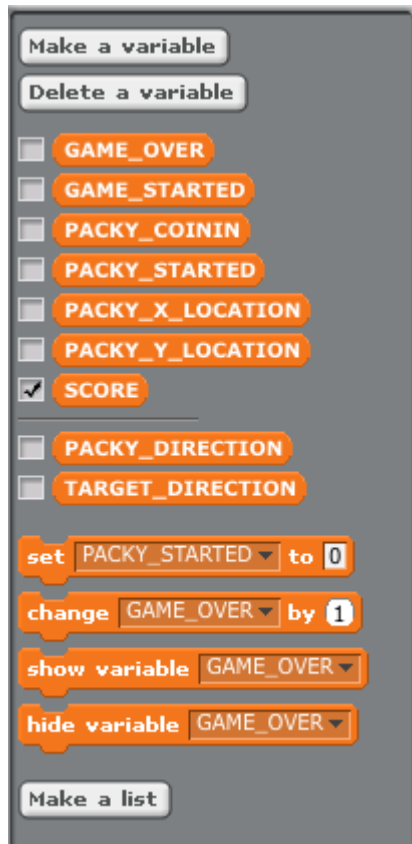


WHY DID WE USE NUMBERS
INSTEAD OF WORDS?

PACKY's DIRECTION IS REPRESENTED USING NUMBERS

- 1 = LEFT
- 2 = RIGHT
- 3 = DOWN
- 4 = UP

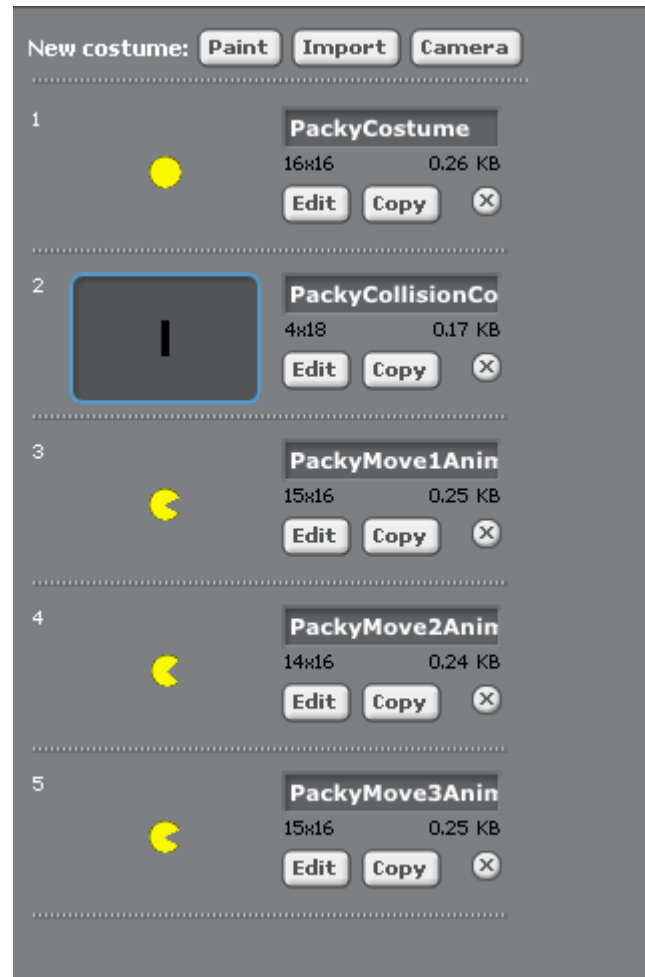
VARIABLE



SOME VARIABLES CAN
BE SEEN BY ALL,
OTHERS BY ONLY THE
SPRITE



COSTUMES



A SPRITE CAN HAVE
SEVERAL COSTUMES



SOUNDS



SCRATCH CAN RECORD
OR PLAY AN EXISTING
SOUND FILE



YOU NOW UNDERSTAND THE BASIC CONCEPTS
GET READY TO PROGRAM!!!



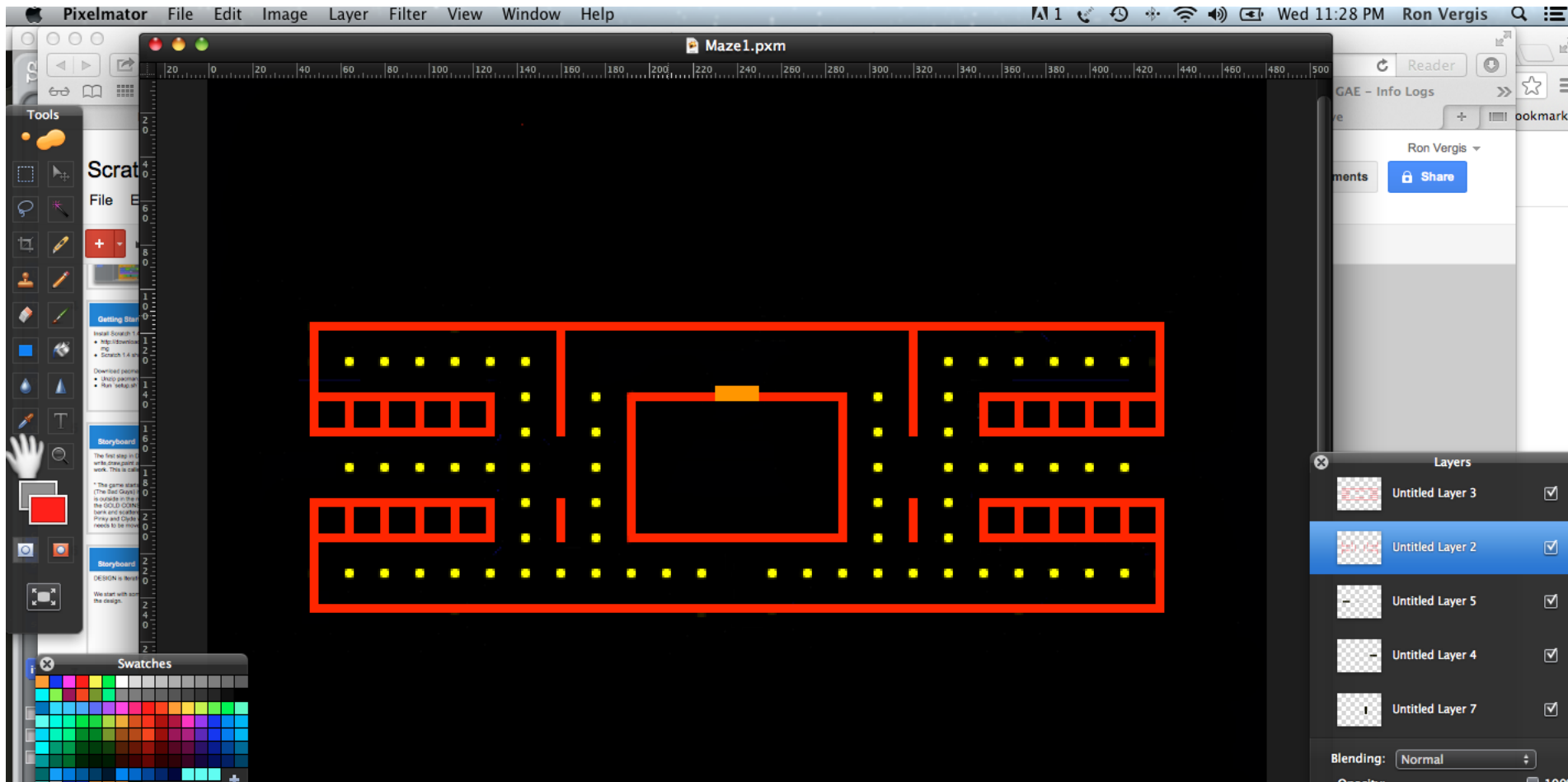
Storyboard

The first step in DESIGNING a GAME is to write, draw, paint a short STORY on how it should work. This is called STORYBOARDING.

" The game starts with Inky, Blinky, Pinky and Clyde (The Bad Guys) in the cell. Packy (The Good Guy) is outside in the maze. Packy needs to retrieve all the GOLD COINS that have been stolen from the bank and scattered all over the MAZE. Inky, Blinky, Pinky and Clyde will try to stop Packy, so Packy needs to be move fast and pick all the coins. "

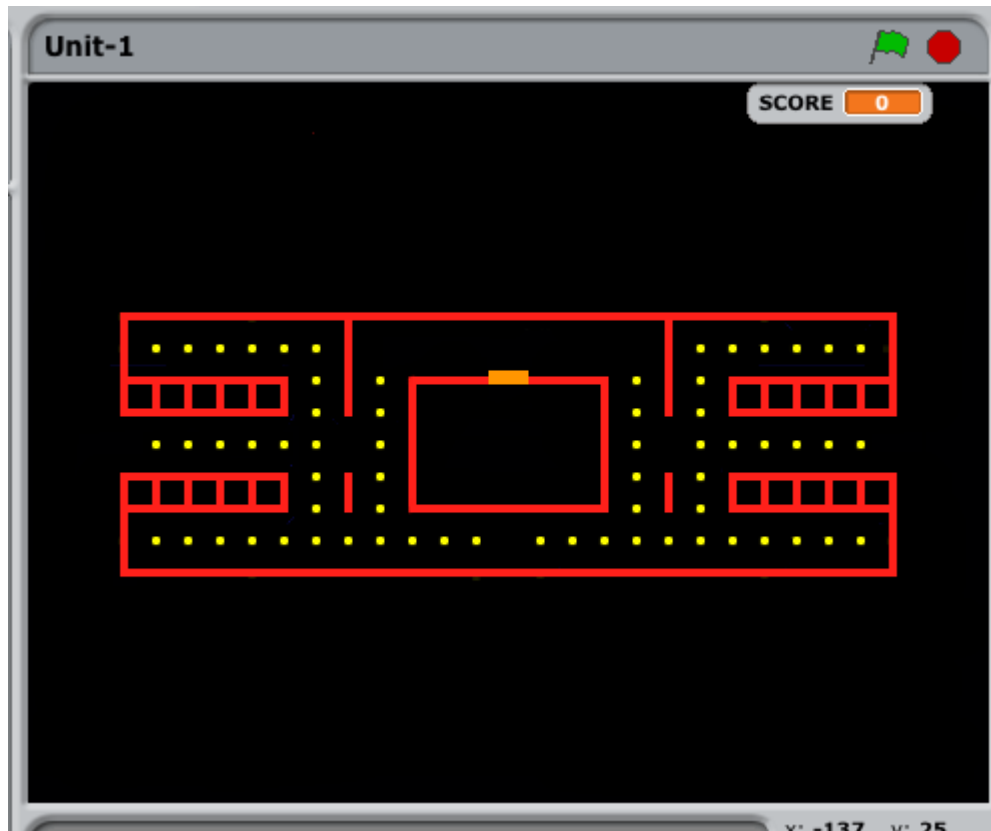
Unit 1

Create Background image using Image Editor.



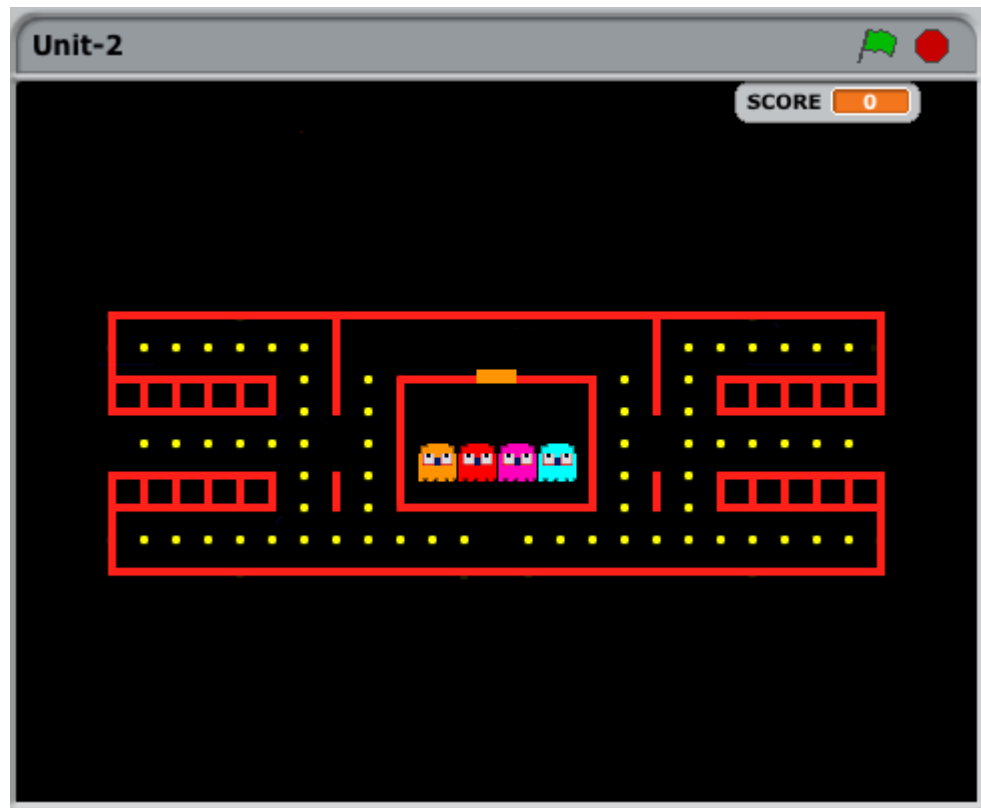
Unit 1

Design Stage Background



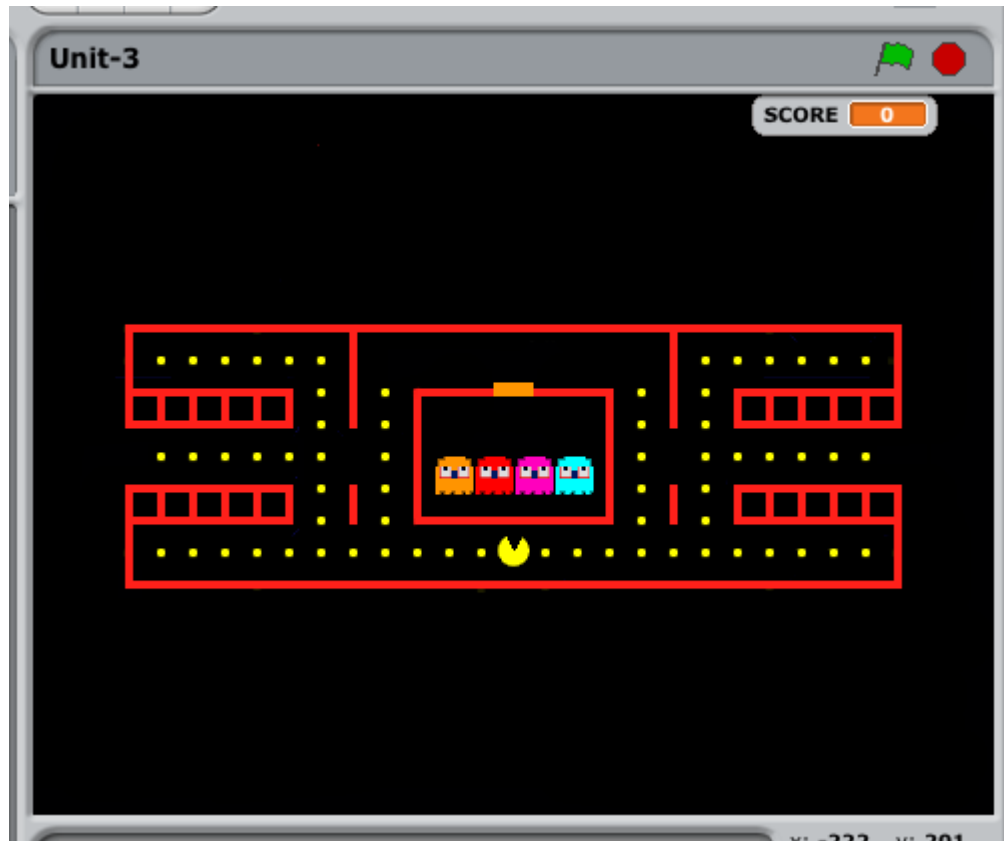
Unit 2

Create Inky, Pinky, Blinky and Clyde. Position.



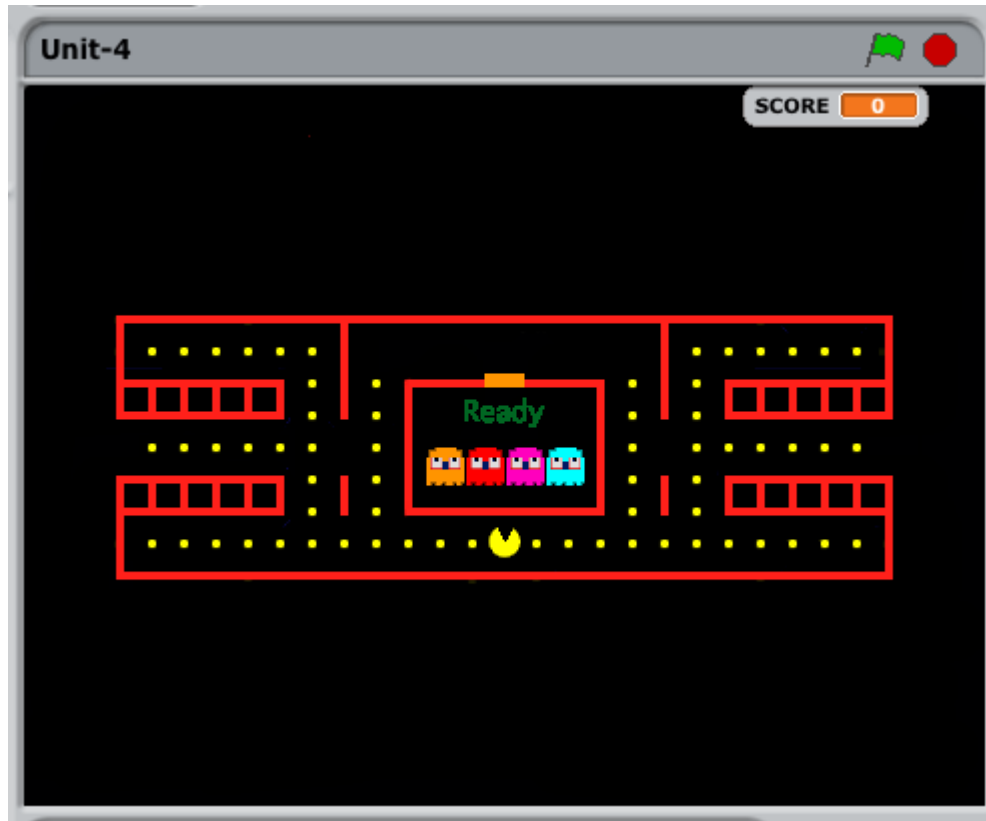
Unit 3

Create Packy. Position Packy.



Unit 4

Create Overlay. Position Text.



Unit 5

PROGRAM PACKY

- Packy should MOVE LEFT, RIGHT, UP, DOWN using ARROW KEYS
- Packy should STOP on hitting a MAZE WALL
- Packy should PICK the coins when MOVING over them
- Packy should STOP on COLLIDING with BLINKY or INKY

Unit 6

PROGRAM BLINKY

- Blinky should MOVE on its OWN
- Blinky should AVOID hitting a MAZE WALL
- Blinky should try to follow Packy but not always
- Blinky should STOP on COLLIDING with Packy

Unit 7

PROGRAM INKY

- Inky should MOVE on its OWN
- Inky should AVOID hitting a MAZE WALL
- Inky should try to follow Packy but not always
- Inky should STOP on COLLIDING with Packy

Unit 8

PROGRAM SCORE

- Score should start with 0
- Score should increase by 100 when PACKY picks a COIN

Unit 9

PROGRAM GAME BEGIN/END

- Game should BEGIN when the Green FLAG is Clicked
- Game should END when the RED circle is Clicked
- Game should END after picking all coins
- Game should END if Packy collides with Blinky or Inky

Unit 10

PROGRAM DISPLAY TEXT

- Game should DISPLAY "Ready" before Game begins
- Game should DISPLAY "Game Over" when Game ends without picking all coins
- Game should DISPLAY "YOU WIN" when Game ends after picking all coins