

SCRATCH

INFINITE CREATION POSSIBILITIES

```
when space key pressed
clear
pen down
repeat 4
  move 100 steps
  turn 90 degrees
```



Ryan Evans

Technology Teacher

Wanaque Borough Schools

revans@wanaqueps.org

<http://www.theedtechteacher.com/>

WHAT IS SCRATCH

- Scratch is a programming language that makes it easy to create your own interactive stories, animations, games, music, and art -- and share your creations on the web. As young people create and share Scratch projects, they learn important mathematical and computational ideas, while also learning to think creatively, reason systematically, and work collaboratively.
 - The Scratch Project - http://info.scratch.mit.edu/About_Scratch



WHY SCRATCH

- Develop 21st Century Skills
 - Visual
 - Object Oriented
 - Flexible (Ages 5 – 15)
 - Integrate into All Subjects
 - Runs on Macs, Windows, and Linux
 - Free!!!
- Gives students greater sense of control and responsibility for the learning process.
 - Encourages creative problem solving.
 - Allows for the designing of projects that are interdisciplinary (art, technology, math, and sciences).
 - Helps students learn to put themselves in the minds of others; since they need to consider how others will use the things they create.
 - Provides opportunities for reflection and collaboration.
 - Sets up a positive-feedback loop of learning, where students can build on ideas.

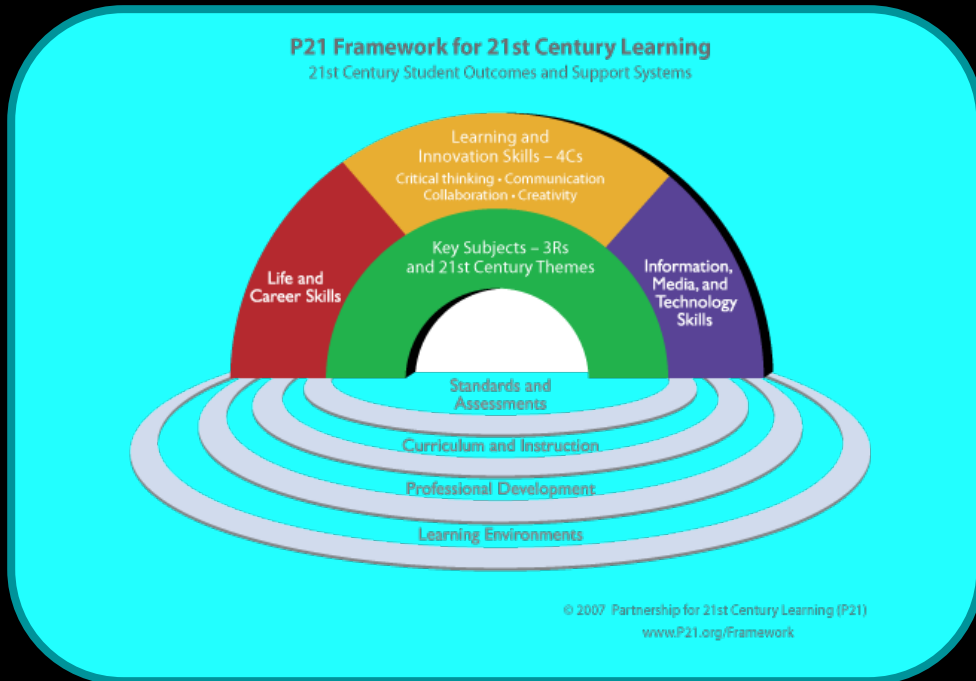


WHY COMPUTER PROGRAMMING



- Learning to Code Prepares Kids for the World We Live in Today
- Learning to Code Develops Problem Solving and Computational Thinking Skills
- Programming is a Basic Literacy in the Digital Age
- Majors related to computer programming are among the highest paying in colleges and universities
- Learning to code teaches you a number of life lessons.
 - Learning from mistakes is vital.
 - You shouldn't fear mistakes or failure.
 - Persistence pays off.
 - Teamwork is important.
- Computational Thinking Fosters Problem-Solving Skills

21ST CENTURY SKILLS



- Core Subjects – 3Rs and 21st Century Themes
- Learning and Innovation Skills – 4Cs
- Information, Media, and Technology Skills
- Life and Career Skills

INTEGRATE INTO ALL SUBJECTS

Core Subjects

- English
- World Languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government & Civics

21st Century Themes

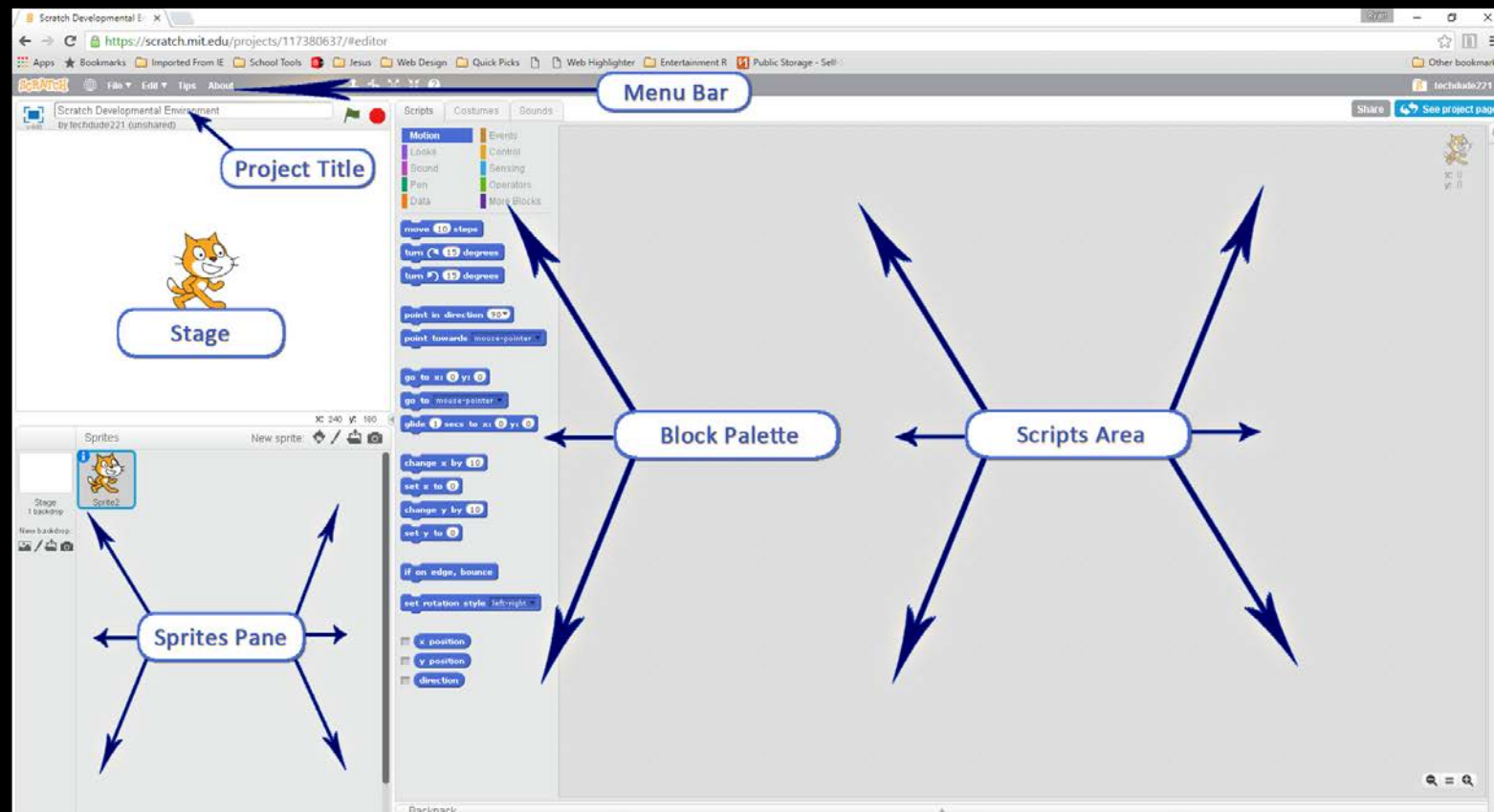
- Global awareness
- Financial, economic, business, and entrepreneurial literacy
- Civic literacy
- Health literacy
- Environmental literacy

GETTING STARTED WITH SCRATCH

What	Where
Create Scratch Account	https://scratch.mit.edu/
Begin Creating	https://scratch.mit.edu/
Getting Started with Scratch 2	https://goo.gl/JGvAPn
Scratch Cards	https://goo.gl/O6dG5G
Scratch Video Tutorials	https://scratch.mit.edu/help/videos/
Scratch Ed Community	http://scratched.gse.harvard.edu/

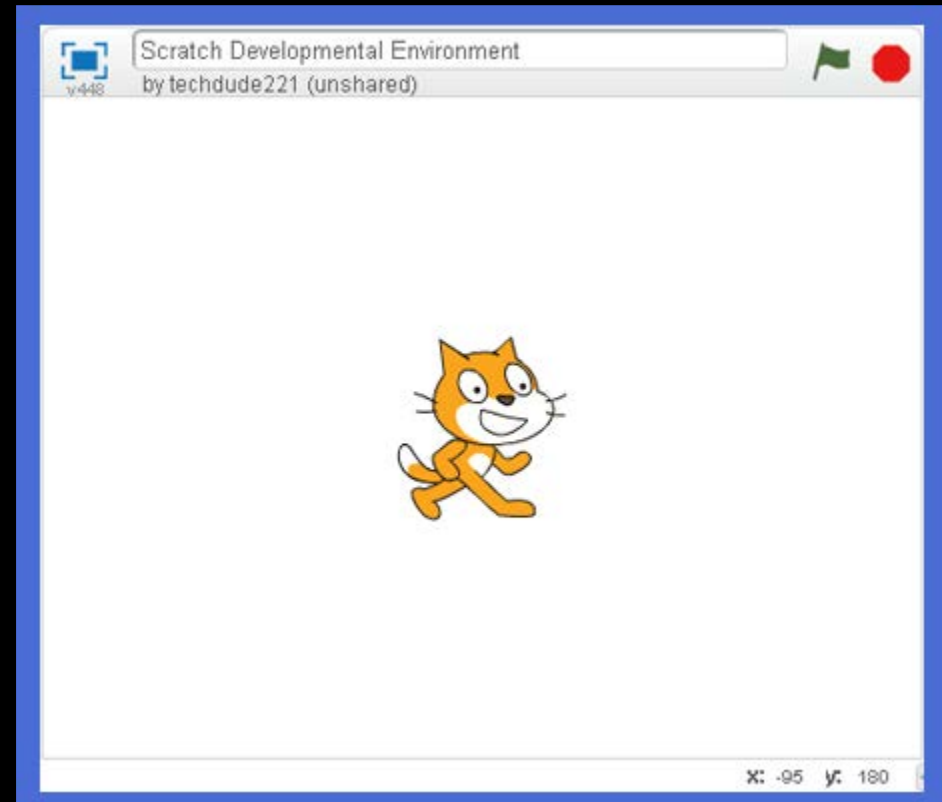


SCRATCH DEVELOPMENTAL ENVIRONMENT



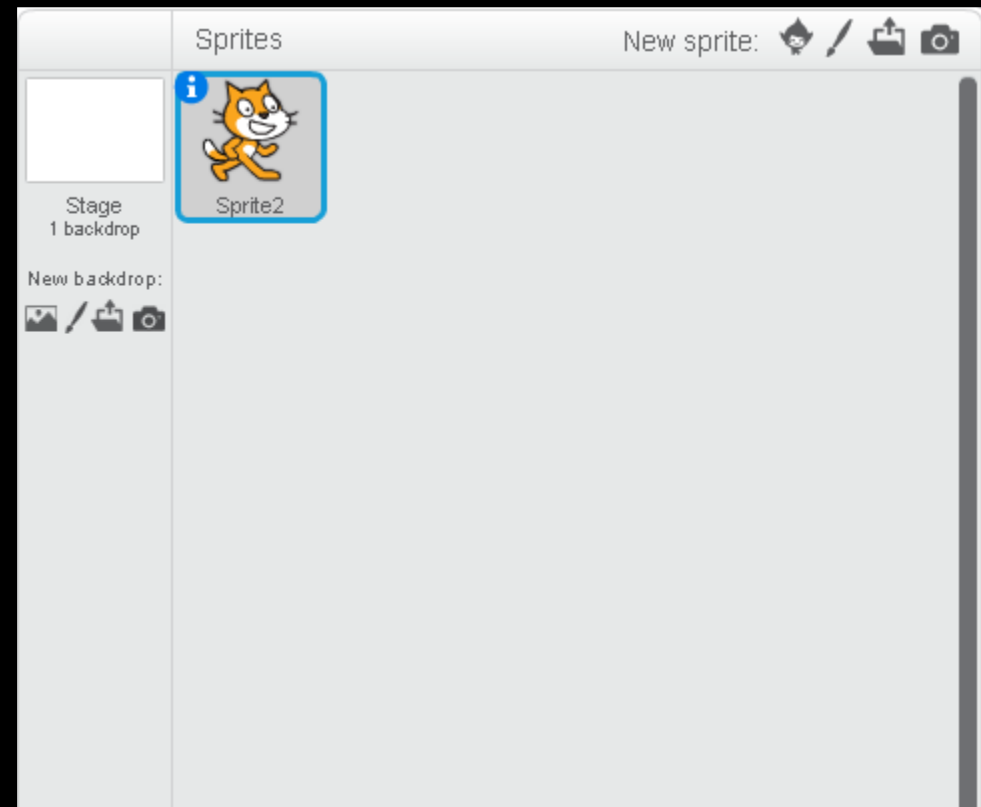
STAGE

- The Scratch stage is where your program will be displayed.

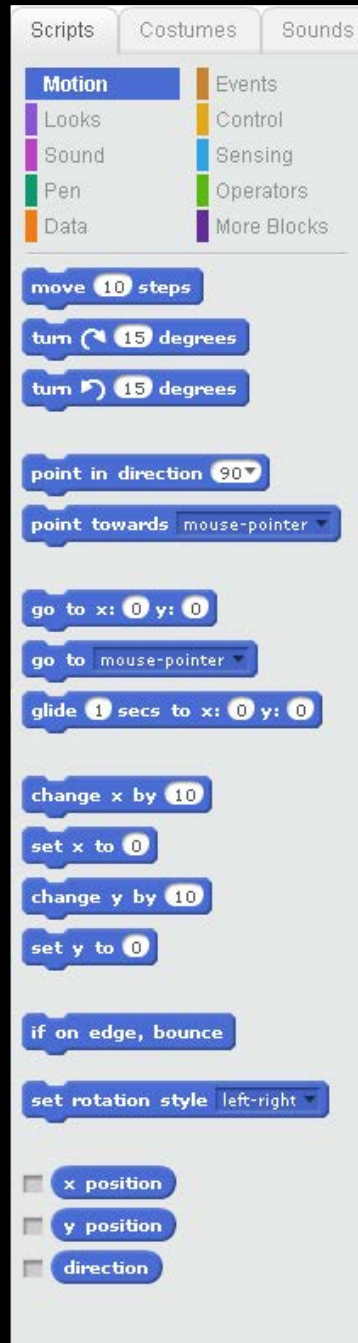


SPRITES & THE SPRITES PANE

- Sprites are the objects in your computer program.
- All of the sprites that appear in your program are located in the "Sprites Pane."
- From the "Sprites Pane," you can add new sprites and new backgrounds.



BLOCK PALETTE



- The Block Palette is the area in the middle-top hand side of the Scratch program where blocks can be dragged from. These blocks fall under the following categories: Motion, Looks, Sound, Pen, Data, Events, Control, Sensing, Operators, and More Blocks.
- Block may also be referred to as "Scripts"

BLOCK PALETTE ADDITIONAL INFO...



- Blocks can be dragged and dropped from the Block Palette into the Script Area. When you drag a block from the Block Palette, a copy of it follows the mouse until you "drop" it where you need it. Dragging a block from the Script Area to the Block Palette will delete the block from the Script Area.
- Right-clicking a block in the palette will give you a drop-down menu with two unique options on what to do. The first option found here in the palette is "duplicate", which allows one to duplicate the block and any blocks below it, hence its name. The second selection that can be found here is "delete", which can be used to delete the block and all of the ones below it.

SCRIPTS AREA

- The Scripts Area is the area on the right side of the project editor where scripts are assembled.



KEY TERMINOLOGY

Term	Definition
Sprite	A Scratch Object
Script / Block	A collection or stack of blocks that all interlock with one another. The blocks and their order are very important, as they determine how sprites interact with each other and the backdrop.
Sequence (Programming Concept)	Identifying a series of steps for a task.
Loops (Programming Concept)	Running the same sequence multiple times.
Parallelism (Programming Concept)	Making things happen at the same time.
Events (Programming Concept)	One thing causing another thing to happen.
Animation	A dynamic visual medium produced from static drawings, models, or objects posed in a series of incremental movements that are then rapidly sequenced to give the illusion of lifelike motion.

USEFUL INFORMATION

- Right clicking many areas and sprites brings about more options.
- Backgrounds can be programmed just as scripts/blocks are programmed.
- Help and more information can be obtained at:
 - <https://scratch.mit.edu/help/>
 - https://wiki.scratch.mit.edu/wiki/Scratch_Wiki_Home
 - https://wiki.scratch.mit.edu/wiki/Scratch_User_Interface#Sprites_Pane
- Scratch Website: <https://scratch.mit.edu/>

CONTACT INFORMATION

- Website

- <http://www.theedtechtteacher.com/>

- Email:

- revans@wanaqueps.org

