

## Wilson Area School District Planned Course Guide

**Title of planned course:** Computer Programming CS1

**Subject Area:** Business

**Grade Level:** 9-12

**Course Description:** This introductory programming course, using Carnegie Mellon University's (CMU) Computer Science Academy (CSA), is designed to introduce students to basic programming. This curriculum is designed for students in 9th grade with algebra readiness, though it is well-suited for students in 9th through 12th grades. No prior programming experience is required. CSA utilizes graphical problems that are visually engaging, allow for multiple correct solutions, and provide visual cues when a solution goes awry, making debugging a cinch. The course is entirely browser-based allowing students to create and run their programs both, inside and outside of the classroom.

**Time/Credit for this Course:** 0.5 Academic Year / 0.5 Credits

**Curriculum Writing Committee:** Kari Maskalis

## Curriculum Map

**Unit 1:** Drawing with Shapes

**Unit 2:** Basic Animations

**Unit 3:** Giving Programs Options

**Unit 4:** Animating Lots of Shapes

**Unit 5:** Creating Drawings

**Unit 6:** Functions, Mouse Events, and Properties

**Unit 7:** Mouse Motion Events, Conditionals, and Helper Functions

**Unit 8:** More Conditionals, Key Events, and Methods

**Unit 9:** Complex Conditionals and More Key Events

**Unit 10:** Groups, Step Events, and Motion

## Wilson Area School District Planned Course Materials

**Course Title:** Computer Programming CS1

**Teacher Resources:** <https://academy.cs.cmu.edu/>  
Units 1-4: Exploring Programming (formerly CS0 2nd Edition)  
Units 5-10: CS1 Introduction to Programming (4th Edition)

## Curriculum Scope & Sequence

**Planned Course:** Computer Programming CS1

**Unit:** Drawing with Shapes

**Time frame:** 1-2 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Draw shapes using Python programming language
  - Circle, Star, Regular Polygon, Rectangle, Oval, Line, Label, Polygon
- Identify and program parameters and properties to shapes
- Learn to program and utilize advanced color options
- Understand and use the canvas
- Use the inspector tool

**Core Activities:** Students will complete/participate in the following:

- 1.1 Notes and Exercises (Basics)
  - 1.1.1 Getting Started
  - 1.1.2 Drawing a Landscape
  - 1.1.3 Practice Exercises
    - Ebbinhaus illusion (Exercise)
    - Flower bud (Exercise)
    - Apple (Exercise)
- 1.2 Notes and Exercises (Stars and Gradients)
  - 1.2.1 Star-ting to Color Well
  - 1.2.2 Practice Exercises
    - Flower bloom (Exercise)
    - Umbrellas (Exercise)
    - Fake Canadian Flag (Exercise)
- 1.3 Notes and Exercises (Rectangles and Opacity)
  - 1.3.1 See-Through Rectangles
  - 1.3.2 Practice Exercises
    - Candles (Exercise)
    - Window (Exercise)
- 1.4 More Shapes and Properties
  - 1.4.1 Shapes Galore!
  - 1.4.2 Properties Galore!
  - 1.4.2 Practice Exercises
    - Drum (Exercise)
    - The Cave (Exercise)

- Lantern (Exercise)
- 1.5 Lesson 5 Unit 1 Project
  - 1.5.1 Axel the Axolotl
  - 1.5.2 Challenge Exercises
    - Car tire (Exercise)
- 1.6 Creative Tasks
  - Creative task 1 (Exercise)
- 1.7 Unit 1 Quiz

**Extensions:** (Exercises)

- Hedgehog and Porcupine
- Lunar vista
- Ripples
- Island Lighthouse
- Nametag
- Perfume
- Wall-E
- Creative task 2

**Remediation:**

- Tutoring
- Resubmission of previous assigned programming activities

**Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

**Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

**Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

**Planned Course:** Computer Programming CS1

**Unit:** Basic Animations

**Time frame:** 1-2 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Use mouse events to manipulate coding
  - onMousePress, onMouseMove
- Identify and program variables and properties to shapes
  - position, size, fill and border, rotation
- Identify and program functions
- Learn to program and utilize onStep to create animations
- Learn and program miscellaneous properties
  - app.background, app.stepsPerSecond
- Understand and use the canvas
- Use the inspector tool

**Core Activities:** Students will complete/participate in the following:

- 2.1 Notes and Exercises (Animations)
  - 2.1.1 onMousePress
  - 2.1.2 Practice Exercises
    - Flower pot (Exercise)
    - Blurry stars (Exercise)
    - Pillows (Exercise)
    - Sushi (Exercise)
- 2.2 Notes and Exercises (Animating with the Mouse)
  - 2.2.1 Naming Shapes
  - 2.2.2 onMouseMove
  - 2.2.3 Practice Exercises
    - Jaws (Exercise)
    - Mirrored dots (Exercise)
- 2.3 Notes and Exercises (Other Animations)
  - 2.3.1 onStep
  - 2.3.2 Special Motion
  - 2.3.3 Practice Exercises
    - Gears (Exercise)
    - Kayaking (Exercise)
    - Clock (Exercise)
- 2.4 Unit 2 Project
  - 2.4.1 Functions and Variables
  - 2.4.2 Playing Catch

- 2.4.3 Challenge exercises
  - Mandala effect (Exercise)
- 2.5 Creative Tasks
  - Creative task 1 (Exercise)
- 2.6 Unit 2 Quiz

**Extensions:** (Exercises)

- Windshield Wipers
- The sun
- Hazy Heat
- Grid making
- Orange Juice
- Creative task 2

**Remediation:**

- Tutoring
- Resubmission of previous assigned programming activities

**Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

**Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

**Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

## Curriculum Scope & Sequence

**Planned Course:** Computer Programming CS1

**Unit:** Giving Programs Options

**Time frame:** 1-2 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Use conditionals to manipulate coding
  - $(a < b)$ ,  $(a \leq b)$ ,  $(a == b)$ ,  $(a != b)$ ,  $(a > b)$ ,  $(a \geq b)$
- Identify and program if-else statements
- Identify and program shape methods
  - `shape.hits(x,y)`, `shape1.hitsShape(shape2)`
- Learn to identify syntax error at equal signs
  - `==` compares two values, `=` sets the variable
- Understand and use the canvas
- Use the inspector tool

**Core Activities:** Students will complete/participate in the following:

- 3.1 Notes and Exercises (Conditionals)
  - 3.1.1 The if Statement
  - 3.1.2 Practice Exercises
    - Sunset (Exercise)
    - Swirling dots (Exercise)
    - Changing directions (Exercise)
    - Rough waters (Exercise)
- 3.2 Notes and Exercises (Using the Keyboard)
  - 3.2.1 Key Animations
  - 3.2.2 Practice Exercises
    - Pixel art (Exercise)
    - Typing (Exercise)
- 3.3 Notes and Exercises (More Conditionals)
  - 3.3.1 If-Else
  - 3.3.2 Practice Exercises
    - Bouncing ball (Exercise)
    - Fried Egg (Exercise)
    - Water molecules (Exercise)
- 3.4 Notes and Exercises (Shape Methods)
  - 3.4.1 Colliding shapes
  - 3.4.2 Practice Exercises
    - Evasive maneuver (Exercise)
- 3.5 Unit 3 Project
  - 3.5.1 Jungle Adventure
  - 3.5.2 Challenge exercises



- Thermometer (Exercise)
- 3.6 Creative Tasks
  - Creative task 1 (Exercise)
- 3.7 Unit 3 Quiz

**Extensions:** (Exercises)

- Big Red Button
- Penalty
- Lightbulb
- Big Red Button 2
- Creative task 2

**Remediation:**

- Tutoring
- Resubmission of previous assigned programming activities

**Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

**Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

**Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

## Curriculum Scope & Sequence

**Planned Course:** Computer Programming CS1

**Unit:** Animating Lots of Shapes

**Time frame:** 1-2 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Use programming to manipulate shapes together in groups
- Identify and use grouping to group together shapes
  - `groupName.add(shape)`, `groupName.remove(shape)`,  
`groupName.centerX=groupName.centerX+5`
- Identify and program loops
- Identify and program random values
  - `randrange(lo, high)`
- Identify and use group properties
  - position, size, other
- Understand and use the canvas
- Use the inspector tool

**Core Activities:** Students will complete/participate in the following:

- 4.1 Notes and Exercises (Groups)
  - 4.1.1 Grouping Shapes
  - 4.1.2 Group Methods
  - 4.1.3 Practice Exercises
    - Spike dodging (Exercise)
    - Spinning display (Exercise)
    - Pirate ship (Exercise)
    - Area 51 (Exercise)
- 4.2 Notes and Exercises (Loops)
  - 4.2.1 Loops
  - 4.2.2 Practice Exercises
    - Hypnotized (Exercise)
    - Lava lamp (Exercise)
    - Anthill (Exercise)
- 4.3 Space Invaders
  - 4.3.1 Adding Randomness
  - 4.3.2 Space Invaders
  - 4.3.3 Challenge exercises
    - Flying Fish (Exercise)
- 4.4 Creative Tasks
  - Creative task 1 (Exercise)
- 4.5 Unit 4 Quiz

**Extensions:** (Exercises)

- Donuts
- Rainy night

- Creative task 2

**Remediation:**

- Tutoring
- Resubmission of previous assigned programming activities

**Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

**Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

**Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

## **Curriculum Scope & Sequence**

**Planned Course:** Computer Programming CS1

**Unit:** Creating Drawings

**Time frame:** 2-3 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Draw shapes using Python programming language
  - Circle, Star, Regular Polygon, Rectangle, Oval, Line, Label, Polygon
- Identify and program parameters to shapes
- Learn to program and utilize advanced color options
- Use the inspector tool

**Core Activities:** Students will complete/participate in the following:

- 1.1 Notes and Exercises (Basics)
  - 1.1.1 Getting Started
  - 1.1.2 Position and Size
  - 1.1.3 Draw two rectangles (Exercise)
  - 1.1.3 Draw three rectangles (Exercise)
  - 1.1.3 Smiley Face (Exercise)
  - 1.1.3 Pickaxe (Exercise)
- 1.2 Notes and Exercises (Colors)
  - 1.2.1 Fills and Borders
  - 1.2.2 Flag of France (Exercise)
  - 1.2.2 Fix the flag of Columbia (Exercise)
  - 1.2.2 Gift wrapped (Exercise)
  - 1.2.3 Colors and Gradients
  - 1.2.4 Blood moon (Exercise)
  - 1.2.4 Flower (Exercise)
  - 1.2.5 Opacity
  - 1.2.6 3D Glasses (Exercise)
- 1.3 Notes and Exercises (Shapes)
  - 1.3.1 Rectangles, Ovals, Circles, and Lines
  - 1.3.2 Crescent Moon (Exercise)
  - 1.3.2 Target Practice (Exercise)
  - 1.3.3 Regular Polygons and Stars
  - 1.3.4 Polygons
  - 1.3.5 Labels
  - 1.3.6 Diamond (Exercise)
  - 1.3.6 Signature (Exercise)
  - 1.3.6 Cube (Exercise)
- 1.4 End of Unit Exercises
  - Flag of Namibia (Exercise)
  - Tropical Island (Exercise)
  - Paper Pool (Exercise)
  - Mountainside (Exercise)
- 1.5 Unit 1 Challenge Exercises (Optional)
- 1.6 Unit 1 Creative Tasks
  - 1.6.1 Intro to Creative Tasks
  - 1.6.2 Giraffe (Exercise)
  - 1.6.2 Creative task 1 (Exercise)
- 1.7 Unit 1 Review
- 1.8 Unit 1 Practice Quiz

- 1.9 Unit 1 Quiz

### **Extensions:** (Exercises)

- 1.1.3 Optical Illusion
- 1.2.2 Flag of Botswana
- 1.2.4 Pipe
- 1.2.4 Diamond Pickaxe
- 1.2.6 Reflection
- 1.2.6 Glass of milk
- 1.3.2 Fix the olympic rings
- 1.3.2 Cactus
- 1.3.6 Cards
- 1.3.6 Good evening, Earth
- 1.3.6 Crystal explosion
- 1.4 Bubble tea
- 1.4 Headphones
- 1.4 McDonalds
- 1.4 Sailboat
- 1.4 Clouds
- 1.4 Panda
- 1.4 Mushroom
- 1.5 Mike Wazowski
- 1.5 Sunset
- 1.5 Painters
- 1.5 Snowflake
- 1.6.2 Scotty flag
- 1.6.2 Lantern
- 1.6.2 Saloon
- 1.6.2 Creative task 2
- 1.6.2 Creative task 3
- 1.6.2 Creative task 4
- 1.6.2 Creative task 5
- 1.6.2 Collaborative Task 1

### **Remediation:**

- Tutoring
- Resubmission of previous assigned programming activities

### **Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

### **Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

### **Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments

- **Summative:**
  - Projects

## **Curriculum Scope & Sequence**

**Planned Course:** Computer Programming CS1

**Unit:** Functions, Mouse Events, and Properties

**Time frame:** 2 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Understand what a function is in terms of programming and implement functions into programming
- Understand onMousePress and onMouseRelease and implement these functions into programming
- Store shapes into variables and identify variable properties
- Understand the correlation between arguments that specify properties
- Successfully implement functions, variables, arguments, and properties into programming
- Identify bugs within programming and begin debugging errors within programming

**Core Activities:** Students will complete/participate in the following:

- 2.1 Notes and Exercises (Functions, Mouse Events, and Properties)
  - 2.1.1 Functions Basics
  - 2.1.2 Running, Testing, and Autograding Functions
  - 2.1.3 Two hexagons (Exercise)
  - 2.1.3 Bunny with a spot (Exercise)
  - 2.1.4 Multiple Parameters
  - 2.1.5 Inflating balloon (Exercise)
  - 2.1.5 Umbrella (Exercise)
- 2.2 Notes and Exercises (Mouse Events)
  - 2.2.1 Mouse Press Events
  - 2.2.2 Using and Debugging Events
  - 2.2.3 Pushpins (Exercise)
  - 2.2.3 Plaid maker (Exercise)
  - 2.2.4 Variables
  - 2.2.5 Mouse Release Events
  - 2.2.6 Eat the cookie (Exercise)
  - 2.2.6 Sun and moon (Exercise)
  - 2.2.6 The bat cave (Exercise)
- 2.3 Notes and Exercises (Properties)
  - 2.3.1 General Shape Properties
  - 2.3.2 Shape-Specific Properties
  - 2.3.3 Puppy (Exercise)
  - 2.3.3 Inchworm (Exercise)
  - 2.3.4 Cookie clicker (Exercise)
  - 2.3.4 Toilet paper (Exercise)
- 2.4 End of Unit Exercises
  - 2.4 Alien eyes (Exercise)
  - 2.4 Animal Tracks (Exercise)
  - 2.4 Toilet paper (Exercise)
- 2.5 Unit 2 Creative Tasks
  - 2.5 Rowboat (Exercise)
  - 2.5 Creative task 1 (Exercise)
- 2.6 Unit 2 Review
- 2.7 Unit 2 Practice Quiz
- 2.8 Unit 2 Quiz

**Extensions:**

- 2.1.3 Polygon Flower (Exercise)
- 2.1.3 3D labels (Exercise)
- 2.1.3 Cooking an egg (Exercise)

- 2.1.5 Colorful nametag (Exercise)
- 2.1.5 Three stripe flag (Exercise)
- 2.1.5 Splash (Exercise)
- 2.1.5 Airport Sign (Exercise)
- 2.1.5 Butterfly (Exercise)
- 2.2.3 Flower vase (Exercise)
- 2.2.3 Shiny lines (Exercise)
- 2.2.3 Cross stitch (Exercise)
- 2.2.3 Octahedron (Exercise)
- 2.2.6 Ice cream (Exercise)
- 2.2.6 Popping balloons (Exercise)
- 2.3.3 Ghost (Exercise)
- 2.3.3 Cookie clicker (Exercise)
- 2.3.3 Scotty dog (Exercise)
- 2.3.3 Hungry panda (Exercise)
- 2.4 Weightlifting (Exercise)
- 2.4 Rocket ship (Exercise)
- 2.4 Spiderman or Venom (Exercise)
- 2.4 Honey jar (Exercise)
- 2.4 Puffer fish (Exercise)
- 2.4 Blinds (Exercise)
- 2.4 Drumset (Exercise)
- 2.4 Bouncing ball (Exercise)
- 2.5 Dragon (Exercise)
- 2.5 Creative task 2 (Exercise)
- 2.5 Creative task 3 (Exercise)
- 2.5 Creative task 4 (Exercise)
- 2.5 Creative task 5 (Exercise)
- 2.5 Collaborative task 1 (Exercise)

### **Remediation:**

- Tutoring
- Resubmission of previously assigned programming activities

### **Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

### **Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

### **Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects



## Curriculum Scope & Sequence

**Planned Course:** Computer Programming CS1

**Unit:** Mouse Motion Events, Conditionals, and Helper Functions

**Time frame:** 2-3 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Understand and implement onMouseMove and onMouseDrag functions
- Identify, determine when to use, and implement conditionals into programming

**Core Activities:** Students will complete/participate in the following:

- 3.1 Notes and Exercises (Mouse Motion Events)
  - 3.1.1 onMouseMove and onMouseDrag
  - 3.1.2 Controlling ovals (Exercise)
  - 3.1.2 File select (Exercise)
  - 3.1.2 Mirror mouse (Exercise)
- 3.2 Notes and Exercises (Conditionals (if Statements))
  - 3.2.1 if Statements
  - 3.2.2 Sun and Moon (Exercise)
  - 3.2.2 Puffy Penguin (Exercise)
  - 3.2.3 Using if-else and multiple if's
  - 3.2.4 Firework (Exercise)
  - 3.2.4 Seesaw (Exercise)
- 3.3 Notes and Exercises (Helper Functions)
  - 3.3.1 Helper Functions
  - 3.3.2 Skyline reflection (Exercise)
  - 3.3.2 Footsteps (Exercise)
  - 3.3.2 Chick (Exercise)
- 3.4 Unit 3 Exercises
  - 3.4 Cursor duplication (Exercise)
  - 3.4 Flowers and clouds (Exercise)
  - 3.4 Flower fields (Exercise)
  - 3.4 Owl eyes (Exercise)
- 3.5 Unit 3 Creative Tasks
  - 3.5.1 Handling Lots of Shapes
  - 3.5.2 Ferris Wheel (Exercise)
  - 3.5.2 Creative task 1 (Exercise)
- 3.6 Unit 3 Review
- 3.7 Unit 3 Practice Quiz
- 3.8 Unit 3 Quiz

**Extensions:**

- 3.1.2 Sewing practice (Exercise)
- 3.1.2 Fruit ninja (Exercise)
- 3.1.2 Cat petting (Exercise)
- 3.2.2 Melting ice (Exercise)
- 3.2.2 Feed the kitty (Exercise)
- 3.2.4 Scoreboard (Exercise)
- 3.2.4 Galaxy (Exercise)
- 3.2.4 Flashlight (Exercise)
- 3.3.2 Flower collection (Exercise)
- 3.3.2 Pacman ghosts (Exercise)
- 3.4 Sleeping dragon (Exercise)
- 3.4 Sunflower (Exercise)
- 3.4 wormy (Exercise)
- 3.4 Flashlight in the woods (Exercise)

- 3.4 Up (Exercise)
- 3.4 Hedgehog (Exercise)
- 3.4 Breakfast (Exercise)
- 3.5 UFO chase (Exercise)
- 3.5.1 Creative task 2 (Exercise)
- 3.5.1 Creative task 3 (Exercise)
- 3.5.1 Creative task 4 (Exercise)
- 3.5.1 Creative task 5 (Exercise)
- 3.5.2 Collaborative task 1 (Exercise)

#### **Remediation:**

- Tutoring
- Resubmission of previously assigned programming activities

#### **Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

#### **Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

#### **Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

## **Curriculum Scope & Sequence**

**Planned Course:** Computer Programming CS1

**Unit:** More Conditionals, Key Events, and Methods

**Time frame:** 2-3 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Understand that a series of if/ elif/ else statements will cease evaluating once any one of them evaluates to True
- Implement if-elif-else statements into programming

- Determine if a group of conditional statements are mutually exclusive and determine if a group of if statements are necessary or an if-elif-else statement would be better suited
- Understand and implement onKeyPress(key) and onKeyRelease(key) event methods into programming
- Utilize shape methods and implement them into programming

**Core Activities:** Students will complete/participate in the following:

- 4.1 Notes and Exercises (More Conditionals (if-elif-else Statements))
  - 4.1.1 if-elif-else Statements
  - 4.1.2 Chameleon (Exercise)
  - 4.1.2 Volume bars (Exercise)
  - 4.1.2 Spongebob (Exercise)
  - 4.1.2 Apple tree (Exercise)
- 4.2 Notes and Exercises (Key Events)
  - 4.2.1 onKeyPress and onKeyRelease
  - 4.2.2 Flapping wings (Exercise)
  - 4.2.2 Dancing stick figure (Exercise)
  - 4.2.2 Caption the worm (Exercise)
- 4.3 Notes and Exercises (Methods)
  - 4.3.1 Custom Properties
  - 4.3.2 Shape Methods 1
  - 4.3.3 City skyline (Exercise)
  - 4.3.3 Connect the dots (Exercise)
  - 4.3.4 Shape Methods 2
  - 4.3.5 Seasonal tree (Exercise)
  - 4.3.5 Maze (Exercise)
- 4.4 End of Unit Exercises
  - 4.4 Cactus Flowers (Exercise)
  - 4.4 Build a Robot (Exercise)
  - 4.4 Pixel art (Exercise)
  - 4.4 Volcano (Exercise)
- 4.5 Unit 4 Creative Tasks
  - 4.5 Etch-A-Sketch (Exercise)
  - 4.5 Creative task 1 (Exercise)
- 4.6 Unit 4 Review
- 4.7 Unit 4 Practice Quiz
- 4.8 Unit 4 Quiz

**Extensions:**

- 4.1.2 Stoplight (Exercise)
- 4.1.2 Cell reception (Exercise)
- 4.1.2 Road trip (Exercise)
- 4.2.2 Solar eclipse (Exercise)
- 4.2.2 Tug of war (Exercise)
- 4.2.2 Essay writer (Exercise)
- 4.3.3 Mirrored polygons (Exercise)
- 4.3.5 Hidden star (Exercise)
- 4.3.5 Prism (Exercise)
- 4.3.5 Meteorite display (Exercise)
- 4.3.5 Porcupine (Exercise)
- 4.4 Nervous eyes (Exercise)

- 4.4 Brick wall (Exercise)
- 4.4 Day and night (Exercise)
- 4.4 Watering plants (Exercise)
- 4.4 Rotating Runes (Exercise)
- 4.4 Rotating stars (Exercise)
- 4.4 Radio (Exercise)
- 4.4 Fishing (Exercise)
- 4.5 Creative task 2 (Exercise)
- 4.5 Creative task 3 (Exercise)
- 4.5 Creative task 4 (Exercise)
- 4.5 Creative task 5 (Exercise)
- 4.5 Collaborative task 1 (Exercise)

### **Remediation:**

- Tutoring
- Resubmission of previously assigned programming activities

### **Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

### **Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

### **Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

## **Curriculum Scope & Sequence**

**Planned Course:** Computer Programming CS1

**Unit:** Complex Conditionals and More Key Events

**Time frame:** 2 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Identify and implement how complex conditionals can be broken down into several simpler tests
- Identify the differences and similarities between nested and compound conditionals
- Implement `onKeyHold(keys)` into programming

**Core Activities:** Students will complete/participate in the following:

- 5.1 Notes and Exercises (Complex Conditionals and More Key Events)
  - 5.1.1 Compound Conditionals
  - 5.1.2 Nested Conditions
  - 5.1.3 Shiny lines (Exercise)
  - 5.1.3 Faces (Exercise)
  - 5.1.3 Rock paper scissors (Exercise)
- 5.2 Notes and Exercises (More Key Events)
  - 5.2.1 onKeyHold
  - 5.2.2 Dot Race (Exercise)
- 5.3 End of Unit Exercises
  - 5.3 Rotating Star (Exercise)
  - 5.3 Surprised Face (Exercise)
  - 5.3 Fireworks! (Exercise)
  - 5.3 Jabber jaws (Exercise)
  - Red light, green light (Exercise)
- 5.4 Unit 5 Creative Tasks
  - 5.4 Takeoff (Exercise)
  - 5.4 Creative task 1 (Exercise)
- 5.5 Unit 5 Review
- 5.6 Unit 5 Practice Quiz
- 5.7 Unit 5 Quiz

**Extensions:**

- 5.1.3 Hello Earth (Exercise)
- 5.1.3 Breakfast (Exercise)
- 5.1.3 Wheelbarrow (Exercise)
- 5.2.2 Anthill (Exercise)
- 5.2.2 Strobing circles (Exercise)
- 5.2.2 Star expansion (Exercise)
- 5.2.2 Bubble pop (Exercise)
- 5.2.2 Empire state building (Exercise)
- 5.2.2 Cocoa (Exercise)
- 5.3 Blind adjustment (Exercise)
- 5.3 Biking (Exercise)
- 5.3 Underwater Tag (Exercise)
- 5.3 Flapping bird (Exercise)
- 5.4 Creative task 2 (Exercise)
- 5.4 Creative task 3 (Exercise)
- 5.4 Creative task 4 (Exercise)
- 5.4 Creative task 5 (Exercise)
- 5.4 Collaborative task 1 (Exercise)

**Remediation:**

- Tutoring
- Resubmission of previously assigned programming activities

**Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

**Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

**Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects

## **Curriculum Scope & Sequence**

**Planned Course:** Computer Programming CS1

**Unit:** Groups, Step Events, and Motion

**Time frame:** 3 weeks

**State Standards:** 5.4.12.D, G-K, A1 Programming Skills, A2 Control Structure, A3 Program Development, B1 Hardware and Software, B3 Troubleshooting

**Essential content/objectives:** At end of the unit, students will be able to:

- Group multiple shapes together within programming
- Manipulate group properties to include complex behaviors
- Identify and implement onStep() coding within program

**Core Activities:** Students will complete/participate in the following:

- 6.1 Notes and Exercises (Groups)
  - 6.1.1 Groups
  - 6.1.2 Group Properties

- 6.1.3 Pull up stick person (Exercise)
- 6.1.3 Metamorphosis (Exercise)
- 6.1.3 Jack in the box (Exercise)
- 6.2 Notes and Exercises (Group Methods)
  - 6.2.1 Group Methods
  - 6.2.2 Paint spill (Exercise)
  - 6.2.2 Saloon at night (Exercise)
  - 6.2.2 Hippo (Exercise)
- 6.3 Notes and Exercises (Step Events and Motion)
  - 6.3.1 Step Events
  - 6.3.2 Motion
  - 6.3.3 Sun and earth (Exercise)
  - 6.3.3 Rainy day (Exercise)
  - 6.3.3 Floating Flamingo (Exercise)
  - 6.3.4 Special Types of Motion
  - 6.3.5 DVD screensaver (Exercise)
  - 6.3.5 Continuous cartwheels (Exercise)
  - 6.3.5 Feeding Fish (Exercise)
- 6.4 End of Unit Exercises
  - 6.4 Up (Exercise)
  - 6.4 Weight lifting stick person (Exercise)
  - 6.4 Bumper cars (Exercise)
  - 6.4 Tron (Exercise)
- 6.5 Unit 6 Semester Creative Tasks
  - 6.5 Beach (Exercise)
  - 6.5 Creative task 1 (Exercise)
- 6.6 Unit 6 Review
- 6.7 Unit 6 Practice Quiz
- 6.8 Unit 6 Quiz

### **Extensions:**

- 6.1.3 Ghost colors (Exercise)
- 6.1.3 Helicopter (Exercise)
- 6.1.3 Hungry giraffe (Exercise)
- 6.2.2 The maze (Exercise)
- 6.2.2 The floor is lava (Exercise)
- 6.3.5 Windmills (Exercise)
- 6.3.5 Boat In Ball Pool (Exercise)
- 6.3.5 Triforce (Exercise)
- 6.4 Excalibur (Exercise)
- 6.4 Boiling teapot (Exercise)
- 6.4 Spinning display (Exercise)
- 6.4 Pulse (Exercise)
- 6.4 Land-Ho (Exercise)
- 6.4 Rotating tardis (Exercise)
- 6.4 Beach ball (Exercise)
- 6.5 Air hockey (Exercise)
- 6.5 Creative task 2 (Exercise)
- 6.5 Creative task 3 (Exercise)
- 6.5 Creative task 4 (Exercise)
- 6.5 Creative task 5 (Exercise)



- 6.5 Collaborative task 1 (Exercise)

**Remediation:**

- Tutoring
- Resubmission of previously assigned programming activities

**Instructional Methods:**

- Direct instruction
- Guided and independent practice
- Projects

**Materials & Resources:**

- Computer, Internet, and Projector
- SMART Board
- CMU Academy

**Assessments:**

- **Formative:**
  - Observation
  - Multi-level questioning
  - Discussion, class assignments
- **Summative:**
  - Projects