



Course Information – Java Track

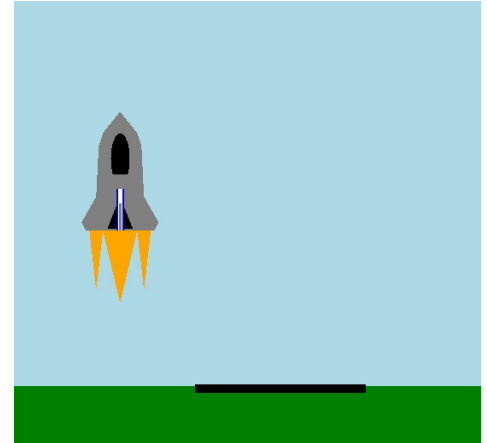
Intro, Intermediate, APCS

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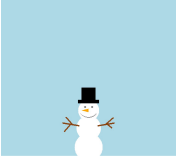

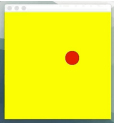
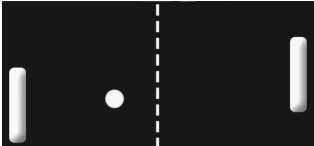
What is our teaching philosophy?

Students will...

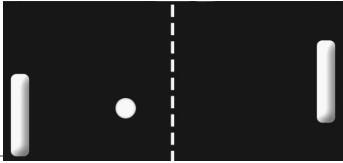
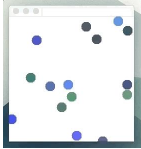
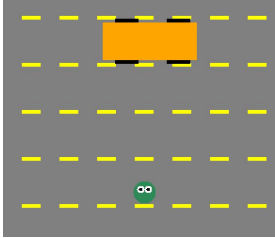
- ❖ Learn core fundamental concepts
- ❖ Experience visual and interactive learning
- ❖ Watch their *own* code come alive
- ❖ Develop *lifelong* problem solving skills



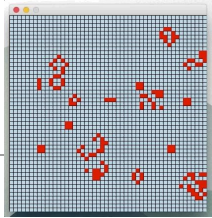
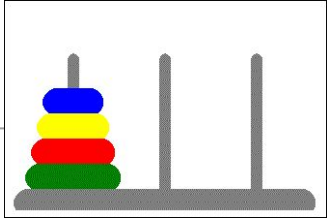
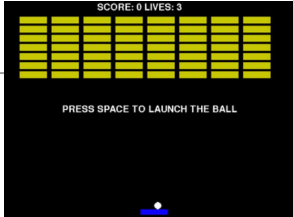
Introduction to Java

What they Learn	What they develop	Visual Output
<ul style="list-style-type: none">• Programming thinking• Basics: Variables, Data Types, Math Operators, I/O• Using Graphics library	Using programming thinking to develop a masterpiece of choice	
<ul style="list-style-type: none">• Logic• Loops• Getting Mouse/Keyboard Input	Animations such as traffic lights and bouncing ball	
<ul style="list-style-type: none">• Object Oriented Programming	Classes, objects, methods: putting classes and driver classes together to solve larger problems	
<ul style="list-style-type: none">• Put it all together	Use classes to develop fun games such as paddle ball, flappy bird or a 2 player pong game	

Intermediate Java

What they Learn	What they develop	Visual Output
<ul style="list-style-type: none">Object Oriented Programming (Recap)	Classes, objects, methods; putting classes and driver classes together to solve larger problems, such as pong	
<ul style="list-style-type: none">1D Arrays, ArrayListsStandard Classes: String, Object	Bouncing balls! Use string manipulation to sort and create speed reading software.	
<ul style="list-style-type: none">Advanced OOP: Relationships: one to one and many to one (inheritance & polymorphism)	Learn the more advanced nature of OOP and develop graphics such as minigolf , ocean with different fish simulation	
<ul style="list-style-type: none">Put it all together in a more complex game with strong conditional logic	Develop one (or all) of Connect 4, frogger	

Advanced Java (Data Structures/ Algorithms)

What they Learn	What they develop	Visual Output
<ul style="list-style-type: none">• 1D Arrays (Recap)• 2D Arrays	Bouncing balls project Tic Tac Toe Game of Life	
<ul style="list-style-type: none">• Search & Sort• Complexity of algorithms	Visualize and understand sorting such as quick sort, merge sort and binary search Complexity and Big O notation for algorithms	
<ul style="list-style-type: none">• Recursion	Fibonacci series, Towers of Hanoi	
<ul style="list-style-type: none">• Data Structures: Linked Lists, Stacks	Develop calculator	
	Build a final project such as Brick Breaker, Towers of Hanoi or Image editor	