Enhancing the Game Development Program at CI

Dr. Eric Kaltman

CS Advisory Meeting

May 13th, 2022
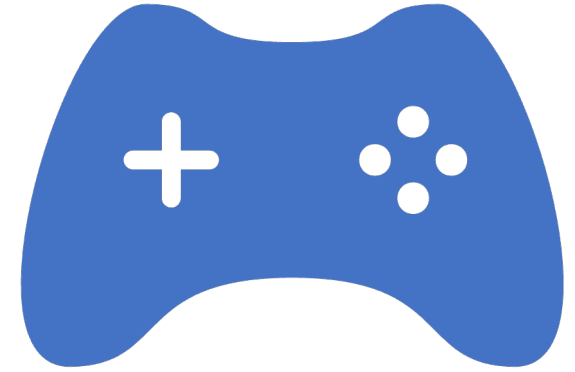
Background

UCSC

- 9th ranked undergraduate game development program (USNews)

- 15th ranked graduate program in computer games (Princeton)

Founder Software History Futures and Technologies (SHFT) group

Co-coordinator Software Preservation Network

Board of Reviewers Game Studies

Outline

1. Current trends in gaming and business
2. Comparative Programs
3. Summary of CI Program
4. Plans for CI Program Future

Gaming by the Numbers

- Games are larger than the film and music industries combined with an estimated annual revenue of ~180 billion dollars worldwide.

- There are ~3 billion people playing games each year.

- East Asia is the largest sector in player count and revenue.

- A majority of the industry is mobile, with casual / hyper casual games taking up a significant percentage.

US Statistics

- 67% of American Adults (age 18+)
- 76% of American Children (under 18)
- 28% are over 45 years old
- 45% identify as female
- 55% identify as male
- 74% of homes have a game player
- 77% play with others at least weekly
- Average player is 31 years old

	Game	Revenue	Initial release	Publisher(s)
1	*Honor of Kings* / *Arena of Valor*	$13,384,000,000	November 26, 2015	Tencent Games
2	*Monster Strike*	$9,912,000,000	August 8, 2013	Mixi
3	*Puzzle & Dragons*	$8,578,340,000	February 20, 2012	GungHo Online Entertainment
4	*PUBG Mobile*	$7,933,000,000	March 19, 2018	Tencent Games / Krafton
5	*Pokémon Go*	$7,760,000,000	July 6, 2016	Niantic / The Pokémon Company
6	*Clash of Clans*	$7,700,000,000	August 2, 2012	Supercell (Tencent)
7	*Candy Crush Saga*	$7,150,000,000	November 14, 2012	King (Activision Blizzard)
8	*Fate/Grand Order* (*FGO*)	$5,533,800,000	July 30, 2015	Aniplex (Sony Music Entertainment Japan)
9	*Fantasy Westward Journey*	$4,700,000,000	March 26, 2015	NetEase
10	*Garena Free Fire*	$4,330,000,000	December 4, 2017	Garena
11	*Roblox Mobile*	$3,600,000,000	December 11, 2012	Roblox Corporation
12	*Lineage M*	$3,578,000,000	June 21, 2017	NCsoft
13	*Coin Master*	$3,008,000,000	March 19, 2018	Moon Active
14	*Dragon Ball Z: Dokkan Battle*	$3,000,000,000	January 30, 2015	Bandai Namco Entertainment
15	*Clash Royale*	$3,000,000,000	March 2, 2016	Supercell (Tencent)
16	*Gardenscapes*	$3,000,000,000	July 5, 2016	Playrix
17	*Genshin Impact*	$3,000,000,000	September 28, 2020	miHoYo
18	*Game of War: Fire Age*	$2,800,000,000	July 25, 2013	Machine Zone
19	*Lords Mobile*	$2,576,700,000	February 26, 2016	IGG
20	*Homescapes*	$2,294,000,000	September 15, 2017	Playrix

Gaming Sectors and Trends

Independent game creators and studios

AAA ("Big Budget") Game Studios

Serious games with applications for healthcare, education, non-profits, and social benefit

Gamification

AR / VR Applications

Industry in Southern California

Many of the AAA game companies are based in or have presence in Southern California:

- Blizzard Entertainment (Irvine)
- Sony Game Studios (Santa Monica)
- Riot Games (Santa Monica)
- Infinity Ward (Woodland Hills)
- Activision HQ (Santa Monica)
- Sega of America (Burbank)

Comparative Programs

Cal Lutheran

- Digital Gaming concentration in Multimedia Major

- No explicit game design courses

CSUN

- Game animation track, game development club, a few courses

Moorpark College

- AS in Game Design

Comparative Programs

UCSB

- No game development programs, some courses and research center

UCLA

- Design Media Arts Major has game design studio courses

UC Irvine

- Game Design Major

CI Minor Program

Interdisciplinary minor designed close to founding of CI

Increased student interest in the last decade

- 1 single minor in 2014
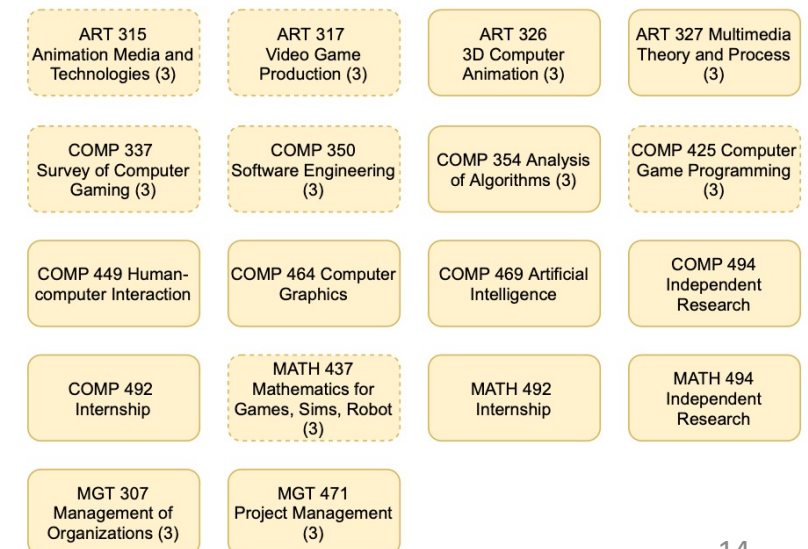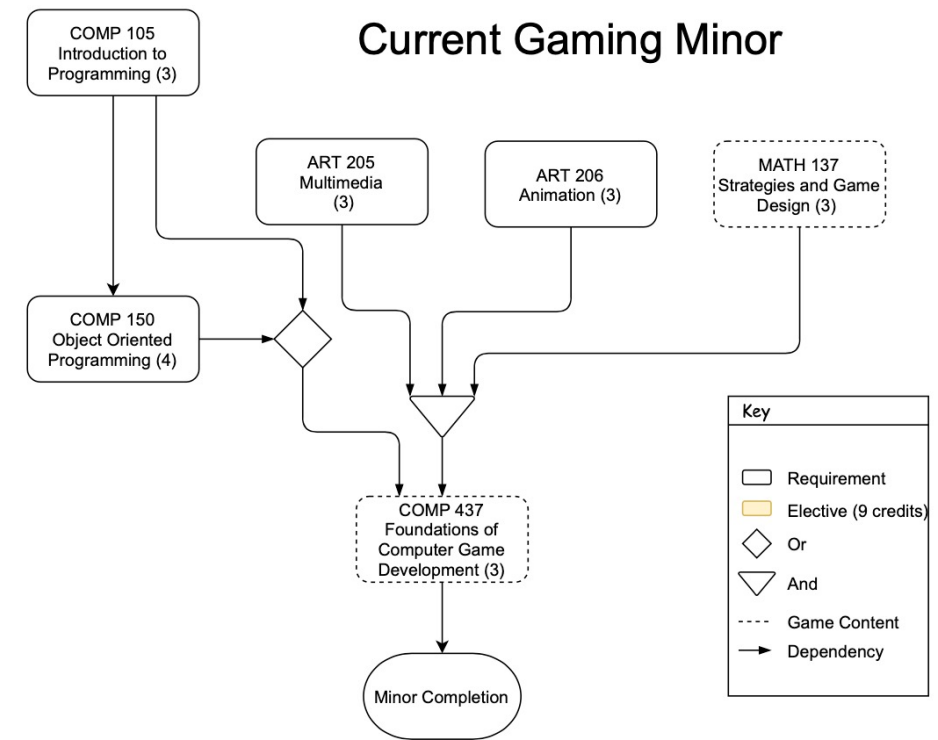
- 29 in 2021

Difficult organization of courses

No top-level coordination for minor due to multiple departments responsible

CI Minor (Current)

Required courses:

- COMP 105 / 150 (programming)
- ART 205 / 206 (animation and multimedia)
- MATH 137 (strategies and game design)
- COMP 437 (foundations of game design)
- 9 elective credits in COMP, MATH, MGT, ART

Current Gaming Minor
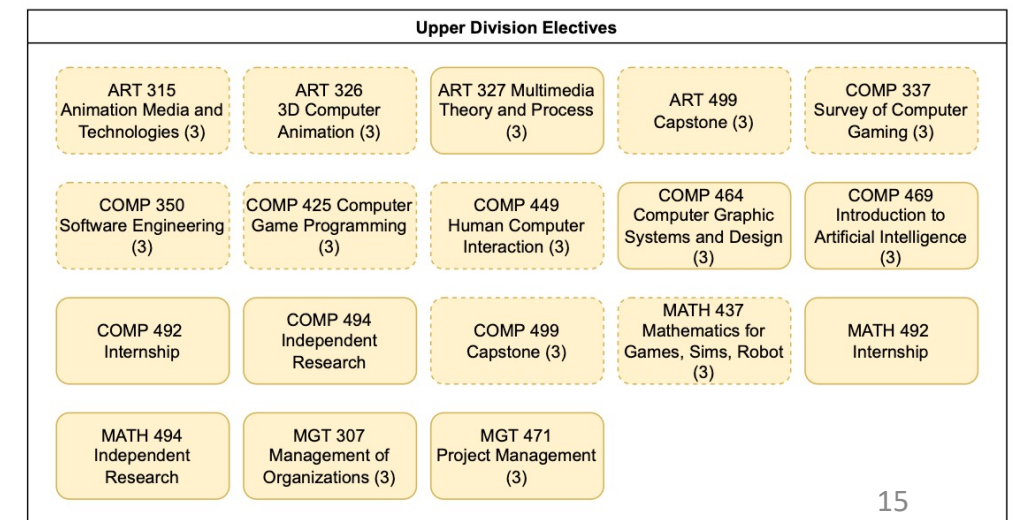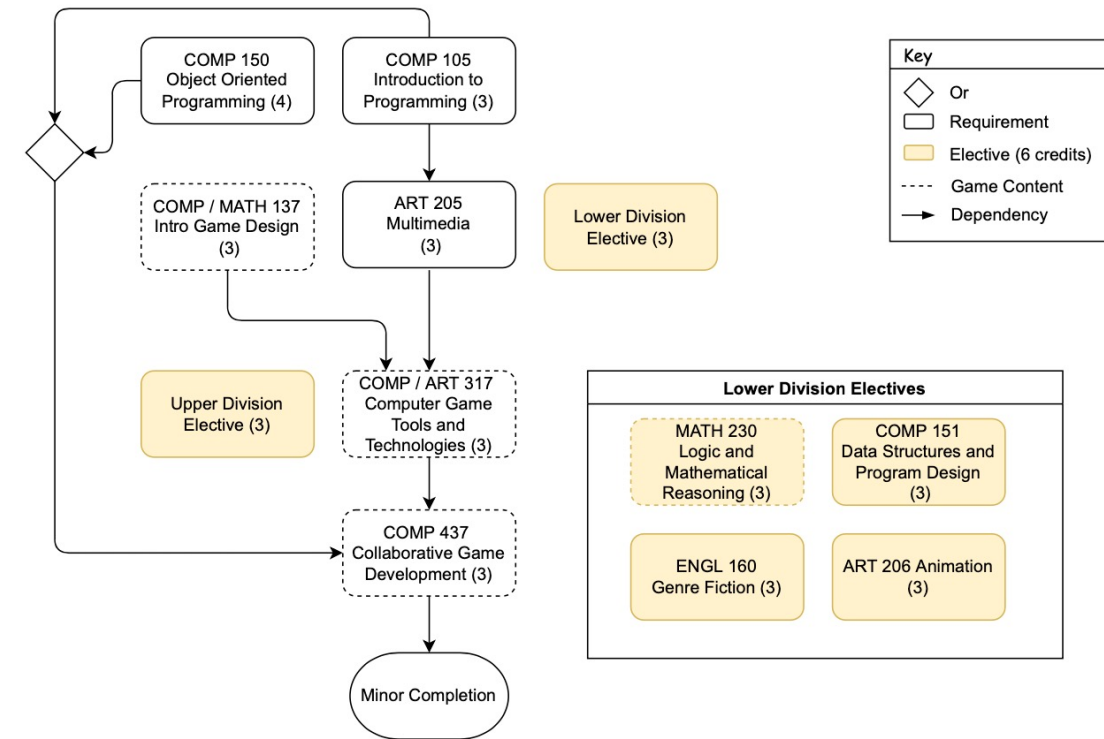
CI Minor (Proposed)

New three-course sequence

- COMP / MATH 137 Intro

- COMP / ART 317 Game Design Tools (Unity)

- COMP 437 Collaborative Game Development

Lower and upper division electives from ART, COMP, ENG, MATH, MGT

Convenient electives for COMP / ART

Key
- ◇ Or
- ▢ Requirement
- ▢ Elective (6 credits)
- ---- Game Content
- → Dependency

COMP 150 Object Oriented Programming (4)

COMP 105 Introduction to Programming (3)

COMP / MATH 137 Intro Game Design (3)

ART 205 Multimedia (3)

Lower Division Elective (3)

Upper Division Elective (3)

COMP / ART 317 Computer Game Tools and Technologies (3)

COMP 437 Collaborative Game Development (3)

Minor Completion

Lower Division Electives

MATH 230 Logic and Mathematical Reasoning (3)	COMP 151 Data Structures and Program Design (3)
ENGL 160 Genre Fiction (3)	ART 206 Animation (3)

Upper Division Electives

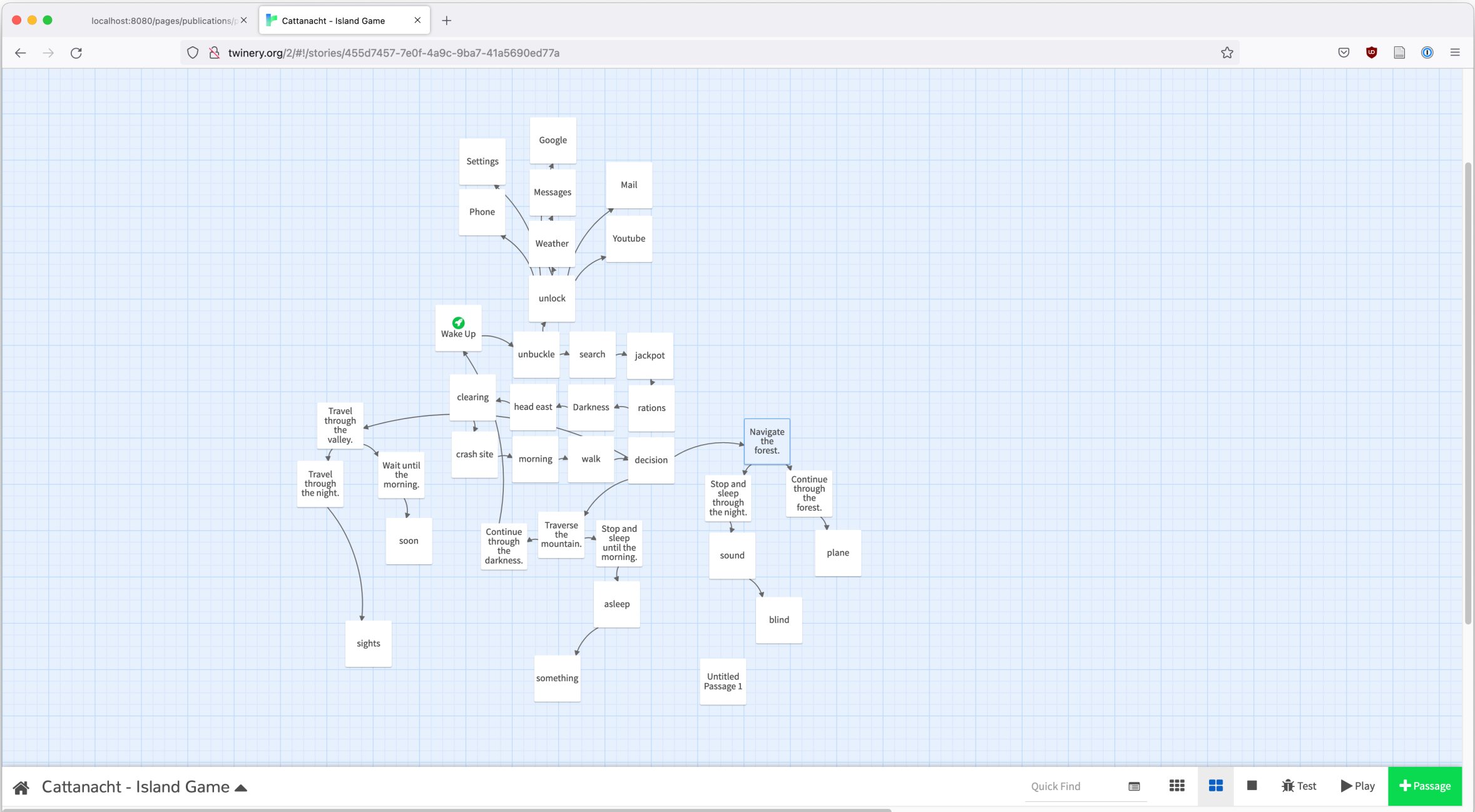| ART 315 Animation Media and Technologies (3)	ART 326 3D Computer Animation (3)	ART 327 Multimedia Theory and Process (3)	ART 499 Capstone (3)	COMP 337 Survey of Computer Gaming (3)
COMP 350 Software Engineering (3)	COMP 425 Computer Game Programming (3)	COMP 449 Human Computer Interaction (3)	COMP 464 Computer Graphic Systems and Design (3)	COMP 469 Introduction to Artificial Intelligence (3)
COMP 492 Internship	COMP 494 Independent Research	COMP 499 Capstone (3)	MATH 437 Mathematics for Games, Sims, Robot (3)	MATH 492 Internship
MATH 494 Independent Research	MGT 307 Management of Organizations (3)	MGT 471 Project Management (3)		

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COMP / MATH 137 Introduction to Game Design
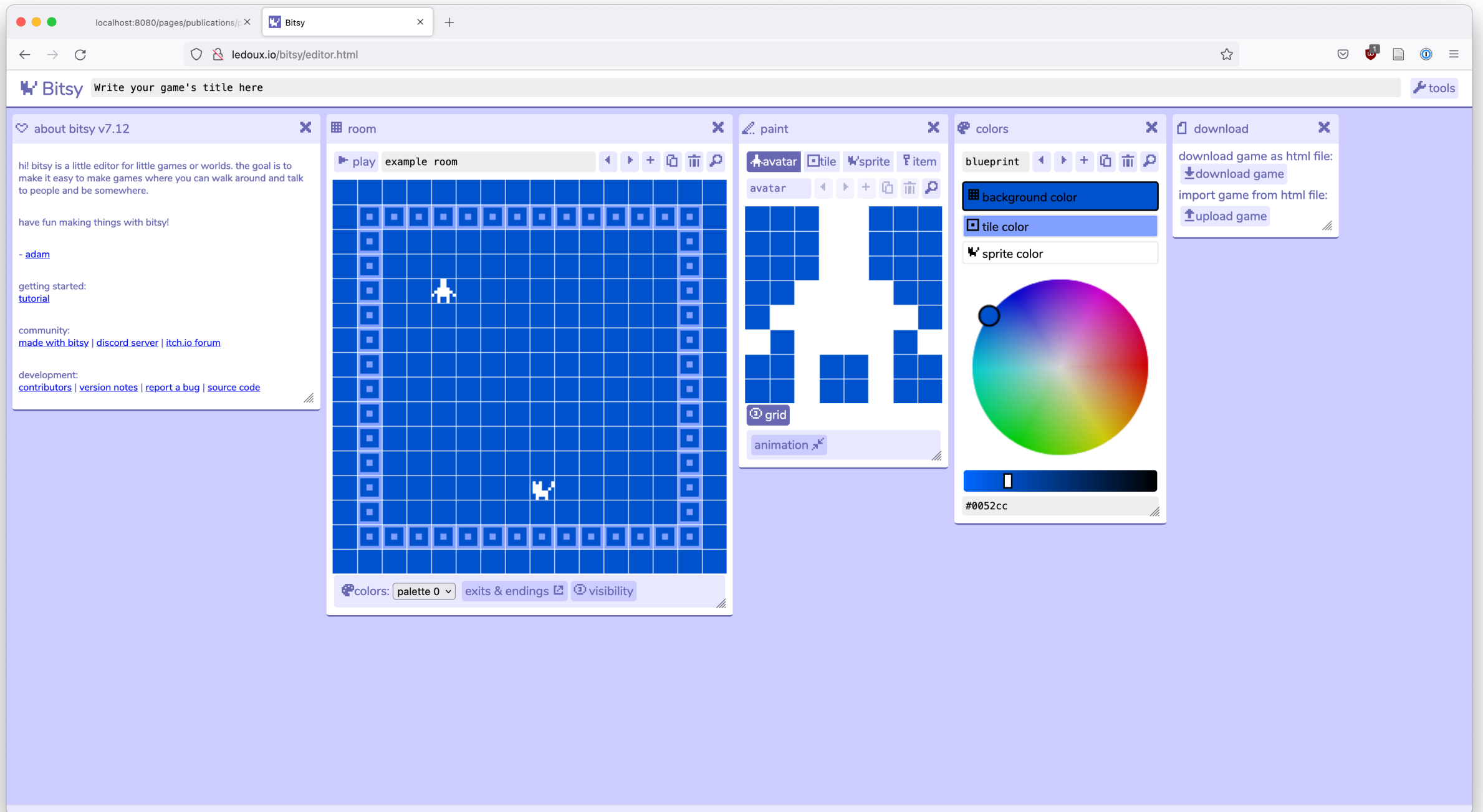
Introductory game assignments in Twine and Bitsy

Game design conceptual introduction

Physical and digital game prototype design

Navigate the forest.

- Settling on the forest as your best option, you pack up your things and begin your expedition through the forest. The forest is quite dense and it makes for a slow pace, and before you know it, night begins to fall. You stop to eat your last meal and have another decision to make. Will you stop for the night, or continue through the forest in the dark.
-
- [[Stop and sleep through the night.]]
-
- [[Continue through the forest.]]

ledoux.io/bitsy/editor.html

Bitsy

Write your game's title here

🔧 tools

♡ about bitsy v7.12 ✕

hi! bitsy is a little editor for little games or worlds. the goal is to make it easy to make games where you can walk around and talk to people and be somewhere.

have fun making things with bitsy!

- adam

getting started:
tutorial

community:
made with bitsy | discord server | itch.io forum

development:
contributors | version notes | report a bug | source code

⊞ room ✕

▷ play   example room   ◁ ▷ + 📋 🗑 🔍

✎ paint ✕

⊹avatar ⊡tile ⊬sprite ⫟item

avatar   ◁ ▷ + 📋 🗑 🔍

⊡ grid

animation ⚹

🎨 colors ✕

blueprint   ◁ ▷ + 📋 🗑 🔍

⊞ background color

⊡ tile color

⊬ sprite color

#0052cc

🗋 download ✕

download game as html file:
⬇download game

import game from html file:
⬆upload game

colors: palette 0 ⌄   exits & endings ⧉   ⓘ visibility

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New Normal

- Nathan Moreno story about life at start of COVID

left at the office, please let us know so we can send it back

COMP / ART 317
Game Design Tools & Technologies

Training in professional game engines, likely Unity

2D / 3D game development and programming

- Basic animation

- Gameplay programming
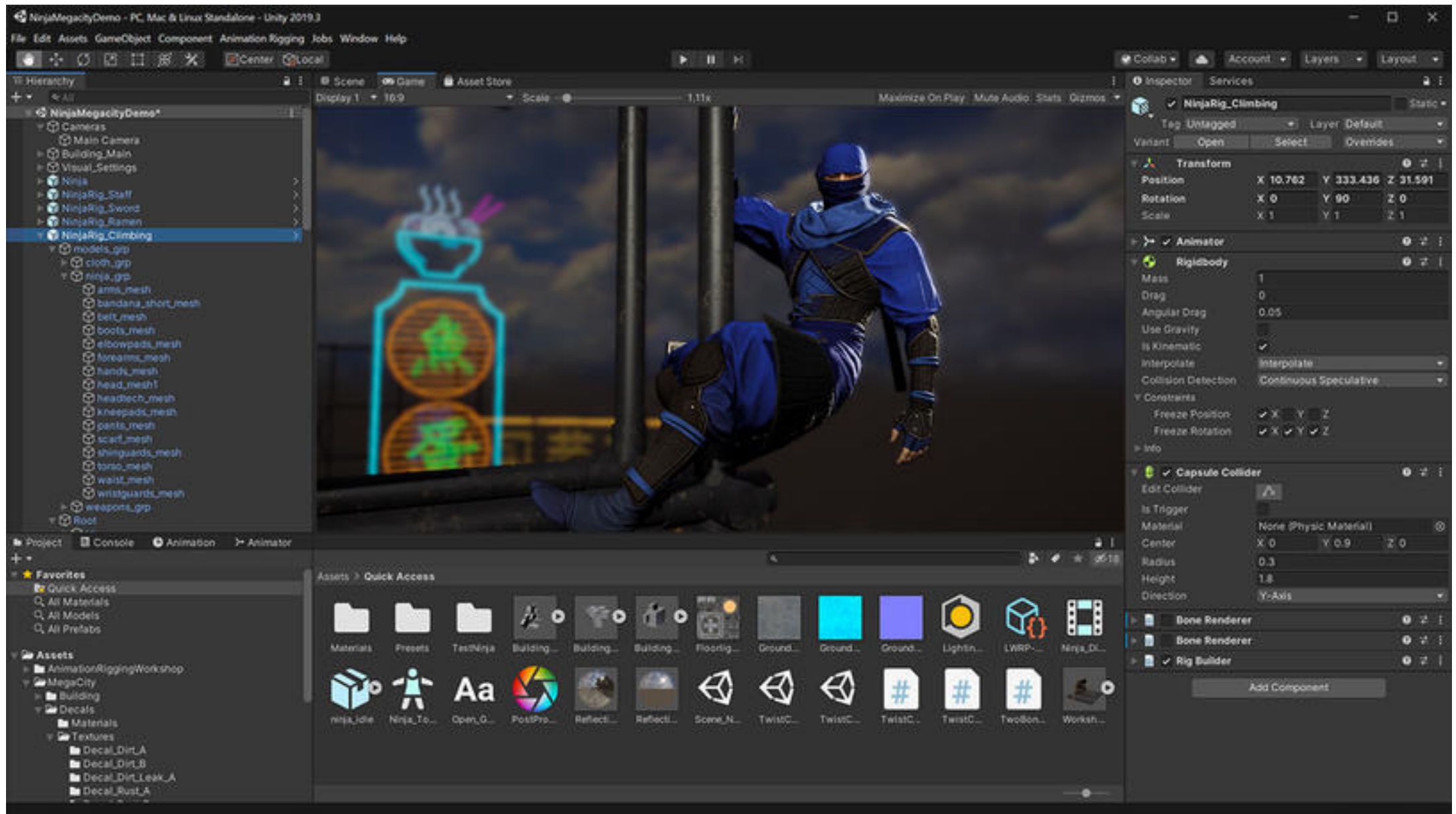
- Environmental and world design

Unity

Main engine used for mobile game development (50%+) and AR/VR applications (60%+) across industries

Initially a game engine, now branching into many different application sectors

C# scripting engine attached to a component-based architecture

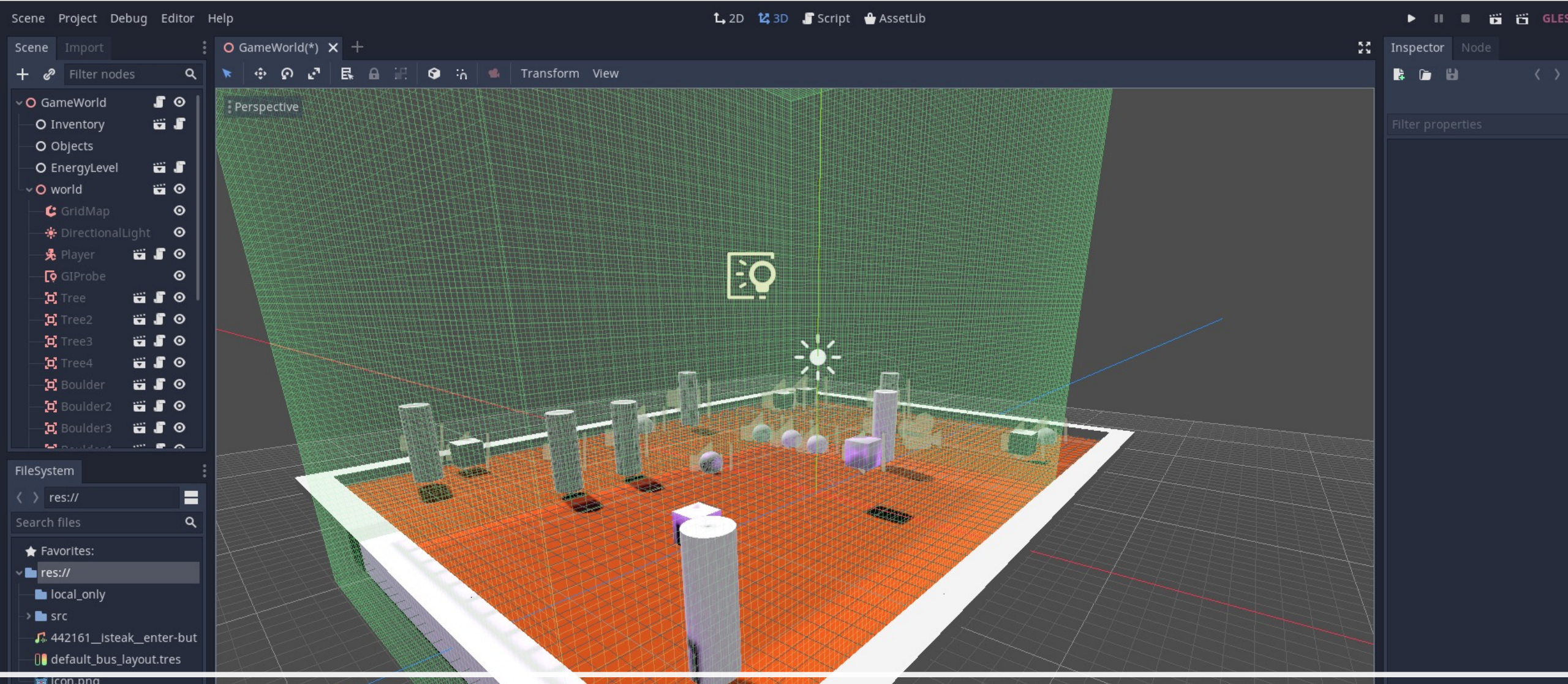Quick prototyping and progress

COMP 437 Collaborative Game Design

Project-based teams developing game on a 14-week schedule

Advanced discussion of game design topics

Goal is to have substantial projects produced for showcase

Sound in the Woods – Timothy Iseri, Tyler Hasty

Game Lab

Solano Hall Rm 2166

5 workstations with gaming PCs

PlayStation 5, Xbox Series X, Nintendo Switch

Two seated VR headsets (Meta) and one room-scale (Valve Index)

Conclusion

Games drive interest in programming and other interactive areas

Highly motivated students

Increased interest in the last few years

Future Plans

Annual Online Game Showcase

Game lab promotion and usage

Esports

Major

Connections with industry