



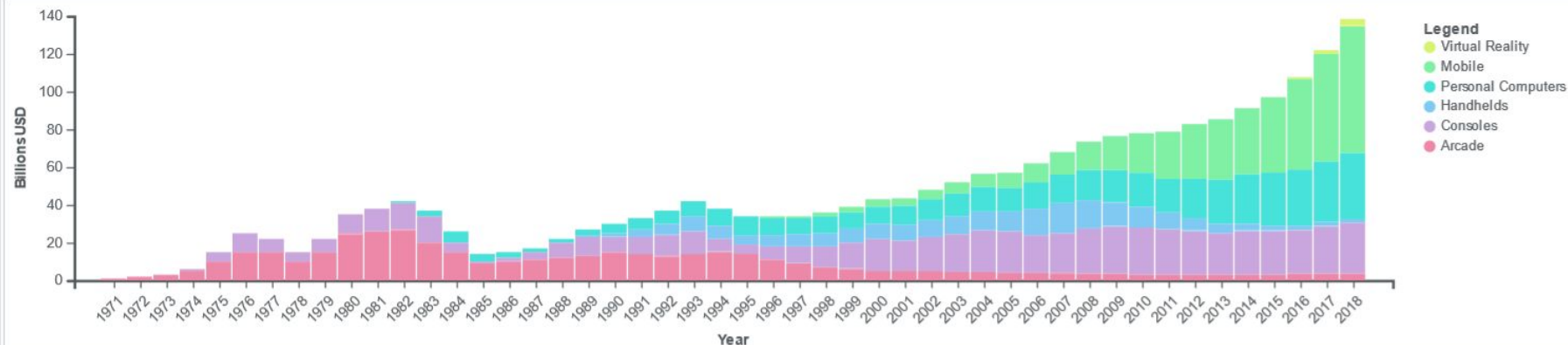
Welcome to Game Design and Development

What is Game Development



“Game Development is the art of creating games and describes the design, development and release of a game. It may involve concept generation, design, build, test and release. While you create a game, it is important to think about the game mechanics, rewards, player engagement and level design.”^[Source]

Video Game Industry



Global revenue estimates of the video game industry from 1971 to 2018, not adjusted for inflation, according to market research firm Pelham Smithers.^[43]

The chart shows the impacts of the 1977 crash, the golden age of arcade games (1978–1983), the video game crash of 1983, the console revival (late 1980s), and the rise of mobile gaming since 2008.

The Video Game Industry is multi billion machine rivaling any all of the older media such as movies, music, and books.

There's an immeasurable number of Publisher and Game Development Studio that release new games daily and it's only getting bigger, if you really want to get a job in it there will be a place somewhere for you.

Additional Resources: [Chart](#)

Sebastian Grygorczuk - STEM Institute at CCNY

Stages of Game Development

As we enter Week 4 and onwards of this class we will be following these stages of Game Development. We will mostly focus on the first four but we will talk about how to show off your game once it's done.

[1] It is ideal to know what you want the game to accomplish, the theme of the game, the gameplay style, who it's for.

[2] After this step, the ideas are built out. On many occasions, the idea on paper sounds great but sometimes doesn't work out once you start developing the ideas. You don't actually program any game in this part; rather you write out a Game Design Document that includes how everything in the game should behave and play out.

[3] Production starts once you've settled on parts that were agreed on as good and move forwards to crafting a game out of them. Things agreed on in pre production may change once developed but the game should adhere to the Game Design Document.

Additional Resource: [The 7 Stages of Game Development](#)



What is a Game Developer?

Game Developer, unlike most Software Developers, doesn't specifically refer to a programmer.

Since games consist of many assets such as code, art, animations, sound and more, a game developer is someone who fulfills the role of developing assets for the game.


This includes: Game Designers, Programmers, 2D and 3D Artists, Animators, Sound Engineers, and Testers. Each of these disciplines can be broken down even further, and throughout this class you will wear the hats of each of these roles.

Depending on the size of the team creating the game each person may fulfill only one of these roles or a combination of all of them. Be ready to wear a lot of hats.

Additional Resource: [The Big List of: Video Game Development Team](#)



Game Designer



Game Designer is the creative lead of the project, coming up with the infrastructure of how and why the game will work.

If the project become large enough the Game Designer might be broken down into two roles, the Level Designer and the System Designer.


Level Designers take all of the assets created by the Programmers, Artists and Sound Engineers and put them together into levels for the player to play.

System Designers work on the larger scope of the game creating systems, such as enemy behavior, enemy, questing.

Game Designers tend to be the most recognizable names of any Game Development team such as **Shigeru Miyamoto**



Examples of Game Designers



Shigeru Miyamoto is a legendary designer who created many of the beloved franchisees today such as the original *Zelda*, *Donkey Kong*, and *Super Mario Bros* and helped bring back the game industry from the grave. He is now the General Manager of Nintendo.

Sid Meier is the creator of the *Civilization* game series. This series translated the board game appeal onto computer screens. Now he is the Director of Creative Development at Firaxis Games.

Hideo Kojima is the creator of the *Metal Gear Solid* series. This series popularized the Stealth genre. He is the CEO of Kojima Productions.

Peter Molyneux is the creator of the *Populus*, *Dungeon Keeper* and *Black & White* games. Which invented the genre of God Games and is the creator of the *Fable* RPG series. He is now the CEO of 22cans.



Challenge: Design



Think of any nebulous game ideas that you would like to implement in your game:

What is the theme you want to follow?

Is it a 3D game, if so is it over the shoulder, FPS, Isometric or something else? Or is it a 2D game, if so is it top down or side scrolling?

Does the game have a story? Are some plot points you'd like to include?

Feel free to compare it to games that exist.

Game Programmer

Game Programmers make the game tick and provide a function to the assets created by the the artists. However, depending on the scope of the project the game the programmer could work on everything or a small system.


Programing roles can break down into many sub roles:

- [Gameplay Programmer role](#)
- [Backend / Server / Online Programmer role](#)
- [AI Programmer role](#) [Graphics Programmer role](#)
- [UI Programmer role](#)
- [Animation Programmer role](#)
- [Physics Programmer role](#)
- [VFX Programmer role](#)
- [Audio Programmer role](#)
- [Tools Programmer role](#)

Game Programmers tend to be less known than the flashy designers but you may still recognize a few names such as **John Carmack**.



Examples of Game Programmers

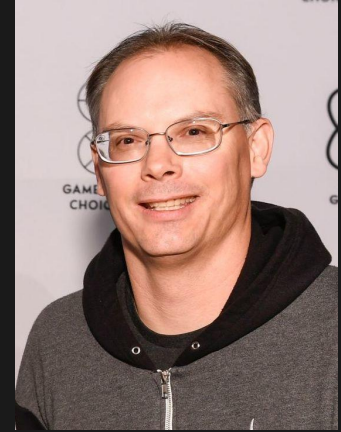


John Carmack is responsible for the current state of today's FPS genre. He programmed *Wolfenstein 3D*, *DOOM* and *Quake* which became foundations for modern FPS shooters like *Call of Duty* and *Overwatch*. Now is the Chief Technology Officer of Oculus VR.

Tim Schafer is a programmer that lead the point-and-click-adventure games through their golden age. Working on *Secrets of Monkey Island* Franches and *Grim Fandango*. Now CEO of Double Fine.

Tim Sweeney is an engine developer who created the original Unreal engine. This helped push the FPS games from the 2D plane to full 3D. Now CEO of Epic Games.

Yuji Naka is the programmer behind the original *Sonic* Trilogy. His work at SEGA allowed them to compete with Nintendo's Mario. He is the CEO of Prope.



Challenge: Mechanics



Now it's time to get a bit more technical, think about the mechanics you want to include in your game.

Are you focused on platforming, puzzle solving, defeating enemies or something else?

What ways does the player have to interact with the world?

Are you keeping score, giving player level ups, or something else to reward them for playing well?

Feel free to compare it to mechanics in games that exist.

Game Artist


Game Artist can be broken down into some many roles; concept artist, sprite artists, texture artist, 3D modelers, riggers, animators, lighting. Depending on the necessary fidelity of the game one person can work on a single item for years.

An example of that would be the cape in Batman Arkham Asylum where "there was one person working on nothing but the cape for two years, so there are over 700 animations and sound clips attached to the cape alone. That's why it looks so beautifully realistic." [[Source](#)]

Although it's the art the conveys the game to us game Artists are hardly recognized for their hard work. An example of a known artist in game industry would be **Tetsuya Nomura**.



Examples of Game Artists



Tetsuya Nomura was an artist on most of the modern *Final Fantasy* games with one of the most famous designs being Cloud and Sora from *Kingdom Hearts*. Now is a Game Director at Square Enix.

Josh Scherr was the Lead Cinematic Animator of the first three *Uncharted* games. These games created movie blockbuster experiences that were not really seen in games at the time and is hard to replace even today. Now is a write at Naughty Dog. [\[Example of Work\]](#)

Keiji Inoue is a Visual Effects Artist behind games such as *Pikmin*, *Wii Sports*, *Super Mario Odyssey* and *Zelda Breath of the Wild*. Now is a Lead Effect Artist at Nintendo. [\[Example of Work\]](#)

Jamie McNulty was the Environment Artists on *BioShock*, *BioShock Infinite* and *Gear of War 4* and *5*. Now is working as a Environment Artist at Deviation Games. [\[Example of Work\]](#)



Challenge: Art



Now start thinking about how the game would look?

Are you going to try to give the game a more cartoony or realistic look?

What kind of setting is your game going to take place in?

What do the character looks like?

Do enemies if you have any have visual indicators of how they should be defeated, or are the platforms marked a certain way to show the player where to go, ect.

Feel free to compare it to art in games that exist.

Sound Designers

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Sound Designers, like artists, are under appreciated. No matter how engaging the game can be, without the proper Sound Effects to feedback to give the player actions or the music to build the tone of the gameplay the games isn't going to be enjoyable.

In addition to Music and Sound Effects, Sound Designers will work with Voice Actors.

Some sounds and songs are synonymous with the games they were made for. One of my personal favorite is Stormwind Theme by Jayson Hayes.



Examples of Sound Designers

Jason Hayes is a veteran composer creating pieces for *Starcraft*, *Warcraft* and *Diablo* and is continuing his work at Blizzard Entertainment. [[Example of Work](#)]

Kōji Kondō a veteran composer creating *Legend of Zelda* and *Mario* music currently in existence. [[Example of Work](#)] Now he countries to work at Nintendo as a Composer.

Masato Nakamura was the sound produce *Sonic the Hedgehog 1 and 2* soundtracks and is most likely responsible for the famous Sonic Ring Sound Effect. Is a bassist for the band Dream Come True but frequently works on Sound Design in games.

Phillip Kovats was the sound director for *God of War*, *The Last of Us*, *Uncharted* and many more Sony projects. He was responsible how the game sounds and mixes the voice acting. [[Example of Work](#)]. Now he is the Sr. Director of Sound at PlayStation Studios.



Challenge: Sound



Now start thinking about how the game would sound?

What kind of music do you want to play?

What atmosphere do you want to set for you player?

Do you want over the top or more subtle sound effects?

Would you have voice acting?

Feel free to compare it to music and sound effects that exist.

Quality Assurance



Quality Assurance is essential for the game to come out in professional way, their job is to test the games limits, document any findings and communicate them back the teams for fixing.

Challenge: Share



Now that you have your game ideas set up form into groups and share what you've come up with.

Sharing will help you delve deeper into the core of what your game has to be and will allow you to see it from different perspective maybe even find somethings to add or tweak.

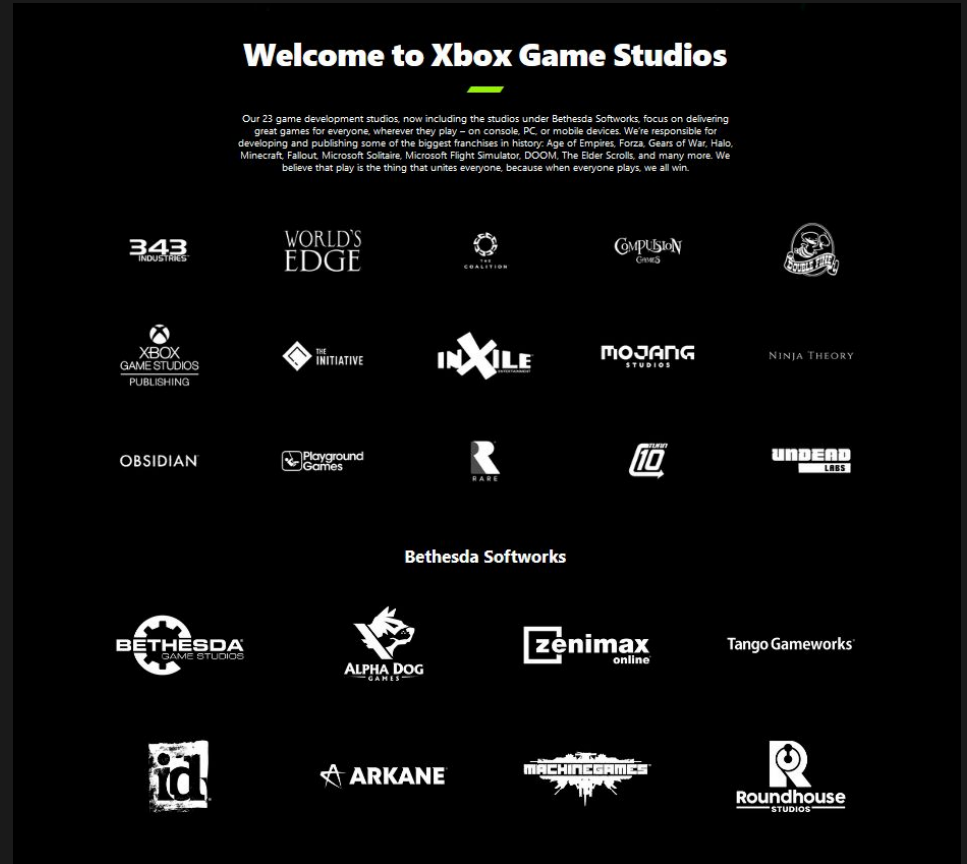
While you are doing that think about all the questions you have to answer as any one of these roles. Think about which one suits you the best.

Publisher and Game Development Studio

Let's get a few more definitions and relationships out of the way:

Game Development Studio is the company who plans and produces the game. Not all Game Development Studios need to use Publishers but most will need the financial and commercial backing. The studio will compose of a lot of people not all of them directly connect to making of the game as some will be dealing with finance, advertising, legal, and more, but at the core there will be the Developers that make the game.

Publisher is the company who distributes the funds to the game development studio to create the game. Making games can be expensive, since it requires lots of people and money and as the game development process takes many years without a game selling. The Publisher front loads the costs of Game Development in agreement that they will get paid out for their investment. They can have a lot of sway in what the game becomes.



Crunch & Game Development Culture



Crunch refers to the rushed development of a game due to a close deadline, like the game's release date. If the game development timeline is poorly planned or managed developers are often pushed to work 80-100 per week which burns people out.

This tends to happen in the larger publishers and if you are ever faced with such a situation in any field **step away**. There are plenty of jobs out there and participating in an environment like this will only drain any passion you may have once had for the field.

Quality Assurance, unlike many of the other roles, isn't necessary for the majority of game production but only on its tail end. Therefore a lot of them are hired for contract work and once the game is done they all get laid off.

Because of the contract style of work they tend to not get benefits like other roles would and tend to receive lower pay and get overworked.

On a brighter note employees at Raven Studio are currently in the process of unionizing their Quality Assurance team for better working conditions.
[\[Article\]](#)

Indie Developers

Let's give honorable mentions to some inspiring **Indie Game Developers** that take all the talents of a Game Development Studio and perform them all by themselves.

Toby Fox, is a breakout star as a Game Designer, Programmer, Artist and Sound Design creating *Undertale* as a one man team.

Supergiant Games is a small team that has created hits such as *Bastion*, *Transistor* and *Hades*. Known for beautiful art, music and innovative approaches to storytelling.

Scott Cawthon is the creator of the massive franchise of *Five Nights at Freddy's* which is now a multimedia empire.

If you'd like to look into what Indie Game Development is like you can watch **Developing Hell**, a documentary of how Supergiant Games created their latest game *Hades*.



Indie Vs Big Studio



Almost all of the people we've mentioned worked in larger studios for big companies. However we do live in the age of the internet where any can sit down and create a game. If you want to be an **Independent Game Developer** or part of a larger team at a Studio will be up to your personal preferences.

Do want to work in a large team or have personal freedom? Or do you want move to one of the few locations with a game development studio? What are you finances looking like as an independent developer? And many more questions like that.

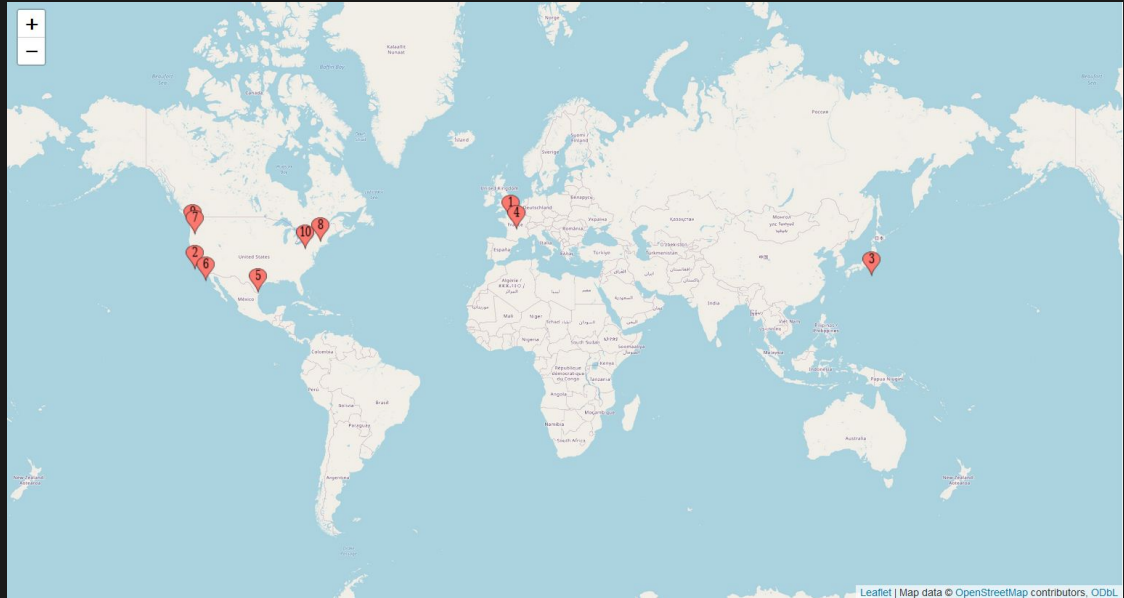
Where Game Studios Exist

Game Development Studios are abound in many place however, New York City is not one of them.

If you'd like work at a large studio you will have to move to one of these cities.

[[Sources](#)] Remote work is opening up as a possibility but on location is the preference for larger companies.

1. London
2. San Francisco
3. Tokyo
4. Paris
5. Austin
6. Los Angeles
7. Seattle
8. Montreal
9. Vancouver
10. Toronto



Challenge: What Path Is For You?



In your groups discuss the publisher and developers that are in the market and see if you would rather work on your own, at an indie studio or a big developer funded by big publisher.

Challenge: Developer Research



Go to <https://www.mobygames.com/>, this website host all of the credit information for games old and new.

Look up your favorite game and see who it is that made the game and what other titles they have worked on?