

Introduction

Fundamentals of Game Development

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History - First Video Games

- The First Video Games:

William Higinbotham and Steve Russell. While William Higinbotham would be credited as the first to design and implement a video game, Steve Russell would be the first to create a game that would inspire the multibillion-dollar video games industry.



William Higinbotham and Tennis for Two
1958



Steve Russell and Spacewar
1962

History - The Console King

- Atari and the 2600
- Video Game Crash of 1983
- Nintendo and Shigeru Miyamoto
- Sega
- Sony's PlayStation
- Microsoft and the Xbox
- Home Computers (Apple Computer, Commodore, IBM)

Game Development in Iran

- Dec 1996, Tank Hunter Released:

In the mid-90s we see the first serious attempts at local game development. A game studio was established called Honafa. Honafa was the first game studio which developed a few games for governmental institutions including the Ministry of Islamic Culture and Iran Drug Control Headquarters.



Game Development in Iran

- Ali Baba Released:

Ali Baba was released some time after Tank Hunter, and was developed by Ramin Zafar Azizi, who is not in video games anymore. Ali Baba was a 2D side scroll platformer like Prince of Persia, released for MS-DOS.



Game Development in Iran

- 4 Oct 2005, Quest of Persia: The End of Innocence Released:

Quest of Persia: The End of Innocence was the first 3D game from Iran, developed by Puya Arts. The chief developer was Puya Dadgar. QoP: The End of Innocence also was the first game developed after a five year break in game development in the country, and was the first Iranian-developed game released since the 90s. In 2011 Puya Dadgar, the lead developer of this game, left Iran for the US.



Game Development in Iran

- 2006, Tebyan Started Investing on Video Games:

The Tebyan Cultural Institute existed under the control of Iran's Islamic Development Organization, which was established in 2001. In 2006 Tebyan started developing some video games and during 8 years of activity developed about 25 of them, including Nejat e Bandar (Saving the Port), Moghavemat (Defense), Afsane ye Nowruz (Legend of Nowruz), Koohnavard (mountaineer). None of these games were particularly successful or popular.

- Apr 2007, IRCG Stablshed:

The Iran Computer Games Foundation aka IRCG was actually approved a year before this, by the Supreme Council of the Cultural Revolution. But in 2007 the IRCG started actually operating, and in 2008 started funding some indie video games like Garshasp the Monster Slayer.

Game Development in Iran

- Oct 2010, Garshasp Released:

In 2010 the most expensive Iranian video game of all time (up to that point) was developed by Fanafzar studio with investment from the IRCG. Garshasp 1 and 2's combined budget was about 500,000 USD at that time (which is about 600,000 USD today). Garshasp 1 was the first locally developed video game which gained popularity in Iran, and gamers started actually playing it. Garshasp 2 was never released, because of a disagreement in contract and lack of budget.



Game Development in Iran

- Feb 2011, Cafebazaar Founded:

In 2011 Cafebazaar, an online market for mobile apps and games started operation. Later it became the most important market for Android apps and games, with about 40 million users.

- 2014, Golden Age of Mobile Games Started:

In this year most of the game developers began making Android games and stopped PC game development. Tebyan stopped funding video games and the IRCG staff changed. New IRCG managers changed the way they were investing in video games. IRCG shut down the Tehran Game Expo which had been launched at 2011. In TGF 2014, a mobile game section was added for the first time. In the following years of Tehran Game Festival, there was less and less PC game participation, and mobile games overcame the market and game festivals. Rooster Wars and Fruit Craft were two first mobile games that got viral and popular.

Game Development in Iran

- Up to now:



What Is a Game?

- The general term “game” encompasses board games like chess and Monopoly, card games like poker and blackjack, casino games like roulette and slot machines, military war games, computer games, various kinds of play among children, and the list goes on.
- In academia we sometimes speak of game theory, in which multiple agents select strategies and tactics in order to maximize their gains within the framework of a well-defined set of game rules.
- When used in the context of console or computer-based entertainment, the word “game” usually conjures images of a three-dimensional virtual world featuring a humanoid, animal or vehicle as the main character under player control.

What Is a Game?

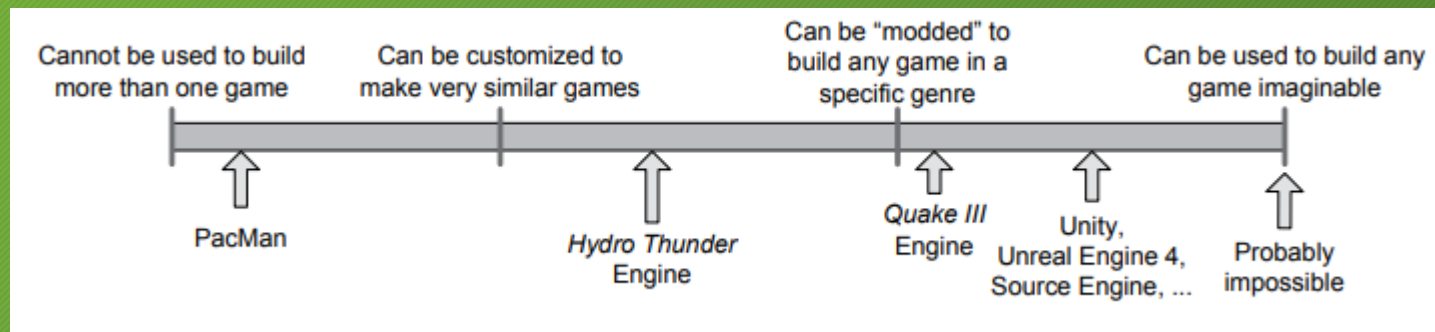
- In his excellent book, *A Theory of Fun for Game Design*, Raph Koster defines a game to be an interactive experience that provides the player with an increasingly challenging sequence of patterns which he or she learns and eventually masters.

What Is a Game Engine?

- The term “game engine” arose in the mid-1990s in reference to first-person shooter (FPS) games like the insanely popular Doom by id Software.
- Doom was architected with a reasonably well-defined separation between its core software components (such as the three-dimensional graphics rendering system, the collision detection system or the audio system) and the art assets, game worlds and rules of play that comprised the player’s gaming experience.
- The value of this separation became evident as developers began licensing games and retooling them into new products by creating new art, world layouts, weapons, characters, vehicles and game rules with only minimal changes to the “engine” software.

What Is a Game Engine?

- A game engine is a software system which is designed for the creation and development of games.
- Leading game engines provide a framework which game developers use to develop the same game for multiple platforms.
- The process is economized by using the same game engine to create multiple games.



Structure of a Typical Game Team

- Engineers
- Artists
- Game Designers
- Producers
- Scrum Master
- Quality Assurance Testers
- BI and Analytics Managers
- Support Team
- Marketing Managers
- Live Ops Managers
- Publishers and Studios

Structure of a Typical Game Team

Engineers

- The engineers design and implement the software that makes the game, and the tools, work.
- Engineers are often categorized into two basic groups:
 - runtime programmers: who work on the offline tools that allow the rest of the development team to work effectively
 - tools programmers: who work on the offline tools that allow the rest of the development team to work effectively
- Some engineers focus their careers on a single engine system, such as rendering, artificial intelligence, audio or collision and physics. Some focus on gameplay programming and scripting, while others prefer to work at the systems level and not get too involved in how the game actually plays.

Structure of a Typical Game Team

Engineers

- Senior engineers are sometimes asked to take on a technical leadership role. Lead engineers usually still design and write code, but they also help to manage the team's schedule, make decisions regarding the overall technical direction of the project, and sometimes also directly manage people from a human resources perspective.

Structure of a Typical Game Team

Artists

- The artists produce all of the visual and audio content in the game, and the quality of their work can literally make or break a game.
- Concept artists:
produce sketches and paintings that provide the team with a vision of what the final game will look like. They start their work early in the concept phase of development, but usually continue to provide visual direction throughout a project's life cycle. It is common for screenshots taken from a shipping game to bear an uncanny resemblance to the concept art.
- 3D modelers:
s produce the three-dimensional geometry for everything in the virtual game world. This discipline is typically divided into two subdisciplines: foreground modelers and background modelers. The former create objects, characters, vehicles, weapons and the other objects that populate the game world, while the latter build the world's static background geometry (terrain, buildings, bridges, etc.).

Structure of a Typical Game Team

Artists

- Texture artists:
create the two-dimensional images known as textures, which are applied to the surfaces of 3D models in order to provide detail and realism.
- Lighting artists:
lay out all of the light sources in the game world, both static and dynamic, and work with color, intensity and light direction to maximize the artfulness and emotional impact of each scene.
- Animators:
imbue the characters and objects in the game with motion. The animators serve quite literally as actors in a game production, just as they do in a CG film production. However, a game animator must have a unique set of skills in order to produce animations that mesh seamlessly with the technological underpinnings of the game engine.
- Motion capture actors:
are often used to provide a rough set of motion data, which are then cleaned up and tweaked by the animators before being integrated into the game.

Structure of a Typical Game Team

Game Designers

- The game designers' job is to design the interactive portion of the player's experience, typically known as gameplay.
- Some (usually senior) game designers work at the macro level, determining the story arc, the overall sequence of chapters or levels, and the high-level goals and objectives of the player.
- Other designers work on individual levels or geographical areas within the virtual game world, laying out the static background geometry, determining where and when enemies will emerge, placing supplies like weapons and health packs, designing puzzle elements and so on.
- As with other disciplines, some senior designers play management roles. Many game teams have a game director, whose job it is to oversee all aspects of a game's design, help manage schedules, and ensure that the work of individual designers is consistent across the entire product. Senior designers also sometimes evolve into producers.

Structure of a Typical Game Team

Producers

- The role of producer is defined differently by different studios.
- In some game companies, the producer's job is to manage the schedule and serve as a human resources manager.
- In other companies, producers serve in a senior game design capacity. Still other studios ask their producers to serve as liaisons between the development team and the business unit of the company (finance, legal, marketing, etc.).
- Some smaller studios don't have producers at all.

Structure of a Typical Game Team

Scrum Masters

- Scrum Master is a person or team that organize the schedule
- They manage the team tasks.
- They are responsible for holding sprint meeting, daily stand up
- Sometimes they hold a retrospective meeting to improve developing pipeline.

Structure of a Typical Game Team

Quality Assurance Testers

- As games become more complex, a larger pool of QA resources, called "Quality Assessment" or "Quality Assurance" is necessary.
- Most publishers employ a large QA staff for testing various games from different developers.
- Despite the large QA infrastructure most publishers have, many developers retain a small group of testers to provide on-the-spot QA.
- Small developers do not generally have QA staff; however, large companies may employ QA teams full-time.

Structure of a Typical Game Team

BI and Analytics Managers

- Business intelligence (BI) is a technology-driven process for analyzing data and delivering actionable information that helps executives, managers and workers make informed business decisions.
- Overall, the role of business intelligence is to improve an organization's business operations through the use of relevant data.
- This position in game industry tries to increase game incomes.

Structure of a Typical Game Team

Support Team

- Support team answer the customers' question in the game or market.
- They are the connection between customers and the developing team.
- They must be available all the time and listen to customers comments.

Structure of a Typical Game Team

Marketing Managers

- Game marketing allows advertisers to pay to have their name or products featured in digital games.
- They are responsible for advertising the product and managing the cost and income.

Structure of a Typical Game Team

Live Ops Managers

- The live operations manager will coordinate the live operations of one or many games and ensure the attainment of the objectives set by the live producer and the producer.
- We will talk about live ops in post production section.