Game Design Workshop

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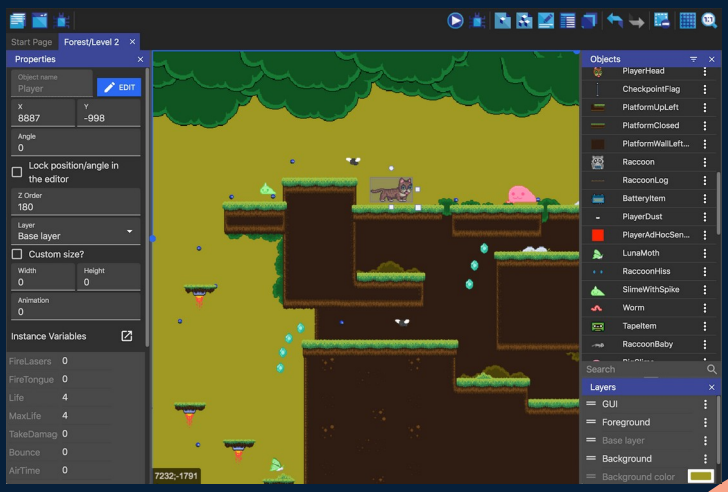

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What we will be doing...

1) Learn a little about the Game Development Process
2) Hands-on building of two games
3) Your game project

* We'll be mixing things up for 1 & 2, so that it don't get too dry

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What this means is that instead of spending a few hours just talking about the game development process, we'll jump between game development and hands-on.

Hands-on building of games

- Two types of games; **Casual** & **RPG**
- Using the GDevelop game engine
- Step-by-step instructions (...easy to follow)
- Challenges at the end (...not so easy)

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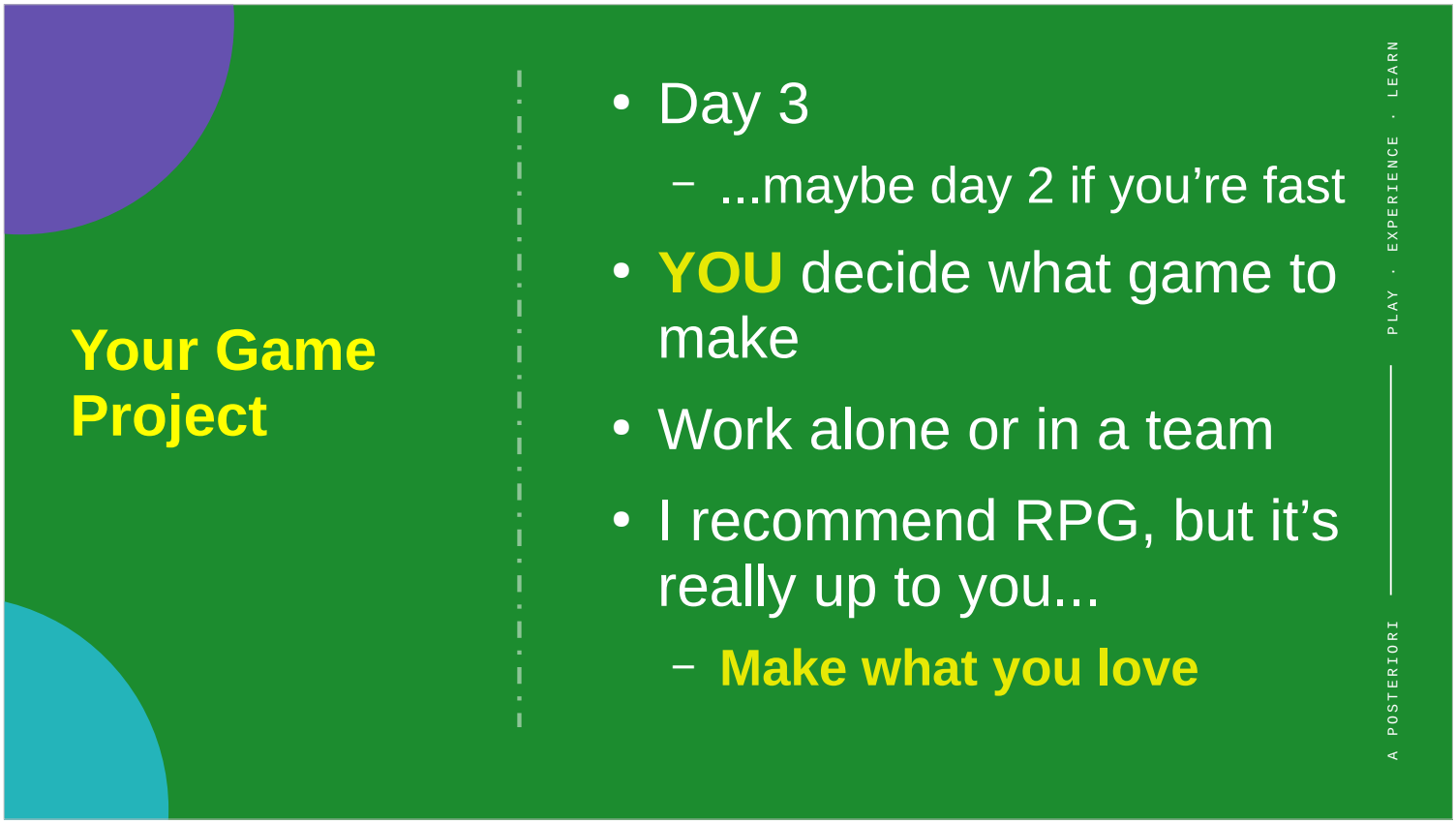
Later on I'll be explaining what are casual and RPG games and why I picked these two genre for you to work on.

For those of you with little or no coding experience, you don't have to worry about keeping up. There will be step-by-step instructions with screenshots for everything.

At the end of each game, there will be some challenges for you to work on. It won't be as easy, but without struggle, you won't make progress. The challenges are an opportunity for you to make mistakes, fail, and learn from the experience.



For the last day, it'll be an open-ended game project. You can choose to work alone or with others, and you can decide what type of game you want to make.

If you don't have a specific genre in mind, I recommend RPG, but it's really up to you.

Be aware that ambitious games are rarely completed on time, and that's OK! ...but we'll only be with you for 3 days, so after that, you're on your own. Well, sort of, you can always ask for help on the Gdevelop forum to complete your magnum opus.

Game Engines

Unity

GDevelop

Unreal

Godot

- What is a game engine?
  - Software that helps in game creation process

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Before we get started on building games with the Gdevelop game engine, we need to understand what is a “game engine”.

Broadly speaking, a game engine is a piece of software that helps in the game creation process

Game Engines

- Provides...
  - Common game operations (eg. Moving player)
  - Rendering to screen (2D, 3D, or both)
  - Game authoring tool (eg. map creator)

Building games without game engine...

..vs using a game engine

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They provide common functions, like automatically moving your player when you press a button.

The also handle drawing your graphics to screen, and some provides special tools to help design your game.

It’s kind of like building a house; you can always try and build everything from scratch, or you can make use of premade parts and build a lot faster.

Unity

- Most popular game engine
- 2D and 3D
- Large community
- Program in C#

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Large community means that it’s easy to find books, tutorials, and online help with your game project.

Unreal

- Popular for big-budget AAA games
- High-end 3D graphics
- Supports 2D, but not popular for this
- Program in C++

Godot

- Free and Opensource
- 2D and 3D
- Rising popularity with indie developers
- Intuitive design
- Program in GDScript, C#, C++, or others

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Godot is a relatively new game engine, but it’s becoming increasing popular.

It’s capability comes close to Unity, and it supports multiple programming languages.

GDevelop

- Free and Opensource
- 2D only
- Designed to be easy to program
- Low code, graphical programming

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Gdevelop is the game engine that we'll be using for our workshop.

Unlike the previous 3 game engines which all require a fair bit of programming skills to use, Gdevelop is designed to be easy for non-programmers to use.

One drawback is that it is 2D only, and it lacks some of the advanced features of other engines.

RPG Maker

- Designed for 2D RPG only
- Easy to use for 2D RPG...
- ...useless for anything else

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Finally, not all game engines are suitable for any types of games.

For example, RPG maker is designed for 2D RPG games only. If you're making a 2D RPG, it is powerful and easy to use, but it's pretty much useless for anything else.

There are also game engines for interactive story games, puzzle games, and fighting games.

Game Engines

- The Good...
  - Less skills required
  - Saves time and effort
  - Tuned for high performance
- The Bad...
  - Limitations in what game engine can do
  - Possibly poor performance if you're doing unusual tasks

Are Game Engines Essential?

- No.
- Minecraft doesn’t use a game engine
- Game mechanism is unique, and not suited to any engines

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Scratch, Tynker, MakeCode?

- These are tools for learning coding
- You can make games with them, but that's not their primary purpose
- Lacks capabilities required for a proper game

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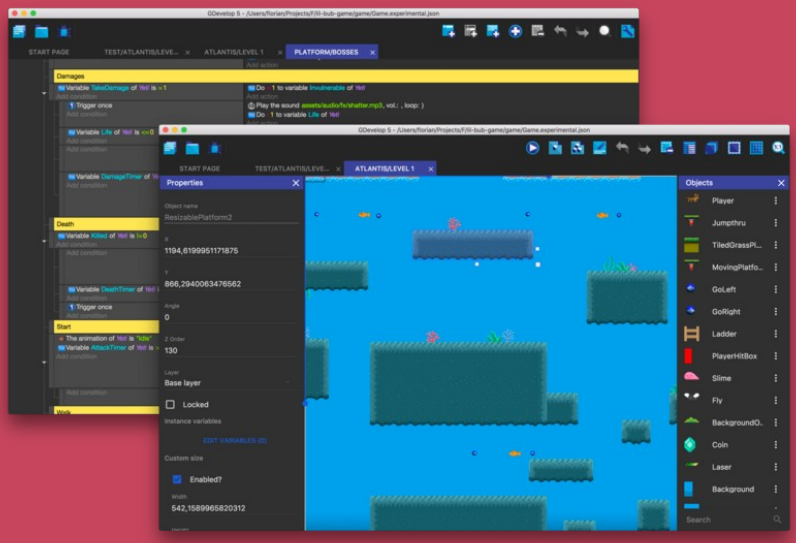
Some of you may have learned Scratch before. That's a great platform for learning coding, but Scratch, MakeCode Arcade, and the likes are designed to teach coding and serious developers don't use them to make games.

If you enjoy using Scratch, that's great! You'll learn a lot about coding from there. But do also try out other game engines. You'll learn more and be able to make better games.

Gdevelop (Hands-on)



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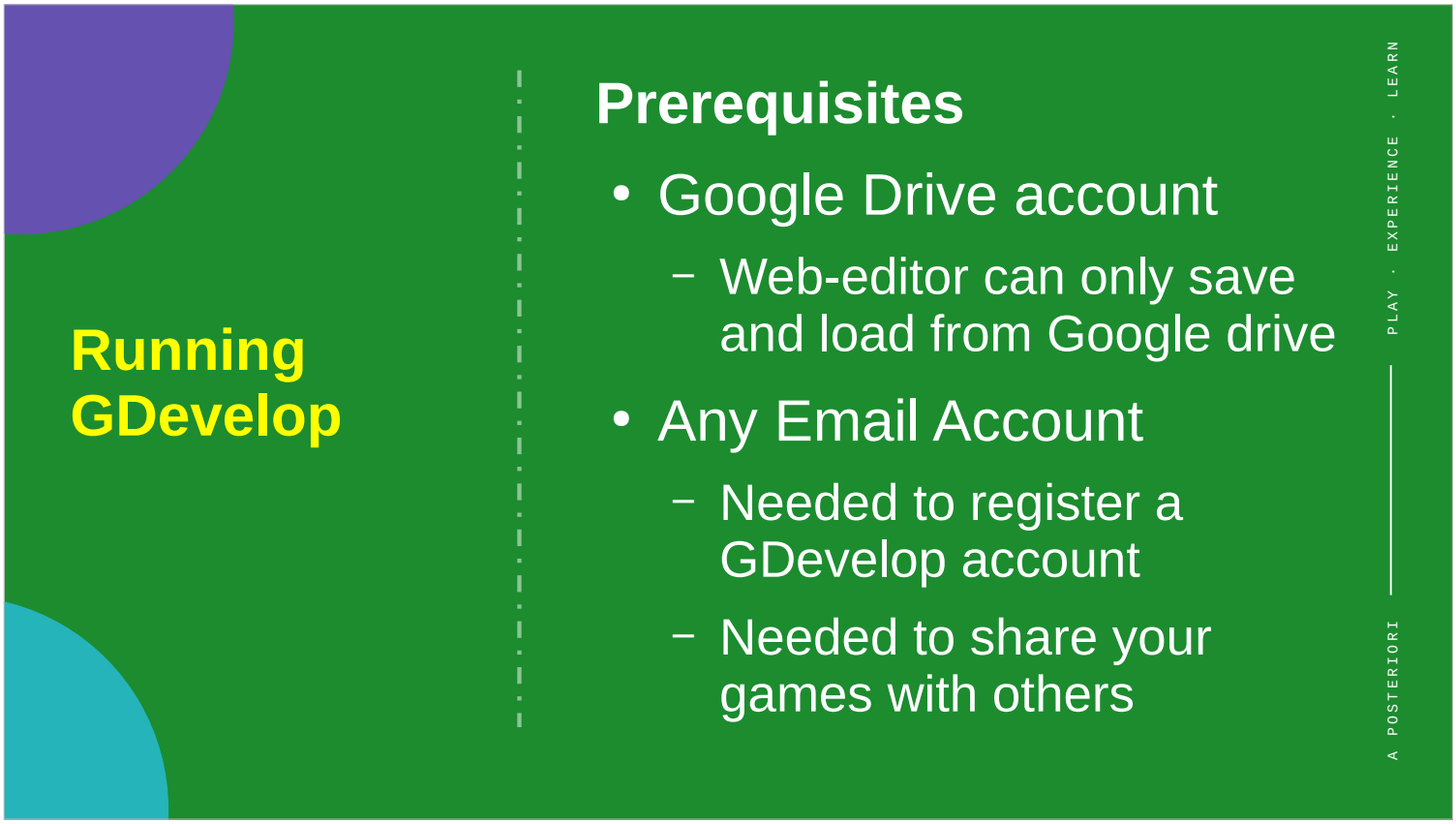

If you're using an iPad, you can only use the web-based editor. The web editor can only save and load from Google drive, so make sure you have a Google drive account.

Instructor's info
1) You can save to computer without Google drive, but the saved file cannot be opened without google drive.
2) Gdevelop save automatically in the browser if you don't have Google drive, but only one game, and this will be lost if the cache is cleared.

It's also recommended to register a Gdevelop account. You don't need this to develop games, but you'll need this if you want to share your games.

Instructor's info
Strictly speaking, you can share the games using other websites without needing a Gdevelop account.

Open Game Tutorials Site

- Visit http://a9i.sg/chij
- Click on the GDevelop link

Game Development World

Mainstream Studios

Indie Developers

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Mainstream Studios

- Big budget (...average of $60 to $80 million per game)
- Huge number of staff (...hundreds)
- Each member plays a single, highly specific role (eg. facial animation designer)
- Risk adverse. Focus on...
  - Sequels
  - Trendy and popular genres

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The cost to develop a mainstream games is very high, and it's getting even higher. Some games are now breaking $300 million.

Because of that, companies are often very cautious with the type of games they release. Many of the big budget games are either sequels of successful games, or are based on what is currently trendy and popular.

- Labor of love (low or no budget)
- Small team (~3 to 6 pax)
- Sometimes only one developer
- Each developer plays many roles
- Focus on...
  - Innovative concepts
  - Novel art design
  - Engaging story
  - Retro, but appealing gameplay

Indie Developers

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With an indie developer, the team is often small and working with little or no budget. This means that the developer often needs to be multi-talented to succeed.

As they cannot afford to create the high quality graphics and large amount of content found in big budget games, indie developers often rely on taking risks that big companies dare not.

Innovative Concept

One of the most well known example is minecraft. While most games at the time were focusing on high-end graphics, it would be generous to say that minecraft’s graphics were rudimentary.

Other unique concepts were the procedurely generated infinite world, the lack of an objective, and the ability to build any arbitary structures.

Novel Art Design

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An example of a novel art design, would be Limbo, a highly successful and multiple award winning game that uses black and white to achieve a specific mood and style.

Engaging Story

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Night in the Woods is another successful and multiple award winning game that eschew fancy graphics for a simple design and a deep and engaging story.

Retro but Appealing

Stardew valley was created by a single developer, based on the old “Harvest Moon” series.

While the newer Harvest Moon games switched to 3D graphics, Stardew valley keep the retro 2D graphics, and polished the gameplay. Stardew valley ended up becoming far more successful than any of the Harvest Moon game (sold 10 times more copies than all 27 of the Harvest Moon games combined).

Game Development Roles

- Game Designer
- Graphics Artist
- Programmer
- Writer
- Level Designer
- Sound Designer

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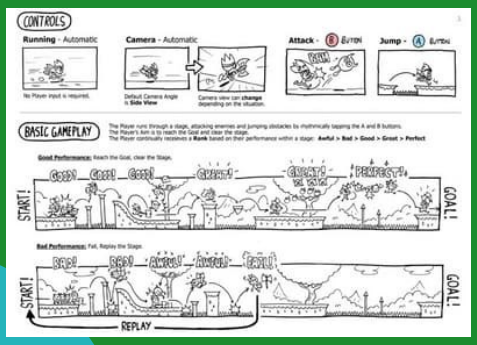
Game Designer



- Main architect of the game
- Creates Design Document
  - Theme & Setting
  - Game rules & mechanics
  - Characters
  - Missions
  - Game feel

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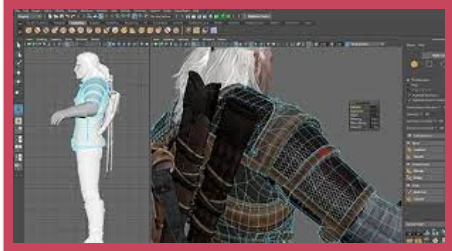
The game designer is often considered the “founder” of a game. So much so that other developers may not even be associated with a game.

Graphics Artist



- 2D or 3D
- May use computer software, but some uses pencil / paper / paint / clay
- May be highly specialized in large teams (eg. UI artist)...
- ...or a single do-everything guy in small teams

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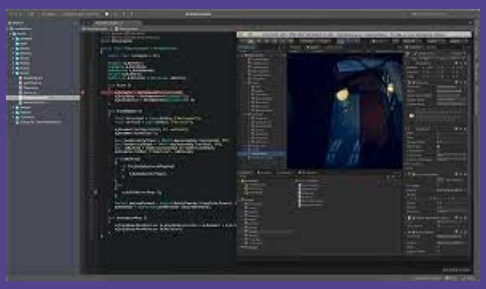
While for some games, it’s possible for the graphics artist to have little IT skills, most of the time, the graphics artist will need to have skills in the relevant software. They may also need to have specific skills in designing art for games.

Programmer



- Implements the logic of the game
- Often require skills in math and algorithms...
  - Vector and matrix math
  - Quaternions
  - Graphics and games related algorithms

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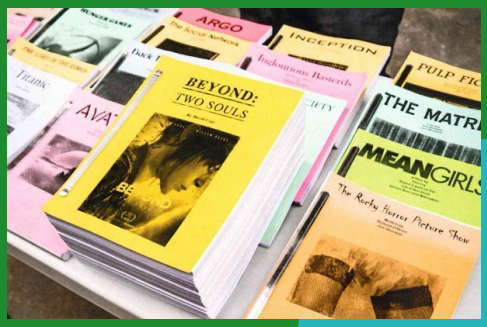
The programmer is the person who brings together the art and media to fit the game designer's vision.

In the past, game programmers often requires highly technical skills to squeeze out the necessary performance from the limited hardware. But with faster computers and the availability of high quality game engines, the work required of the game programmer is greatly reduced.

Nevertheless, a game programmer will still need a fair bit of knowledge in math and algorithms to be successful.

Writer

- Writes the story and dialog for the game
- May be non-existent for some games (eg. Tetris)
- ...or may be the focus for others
- Small game developers often focus on a good story to differentiate themselves



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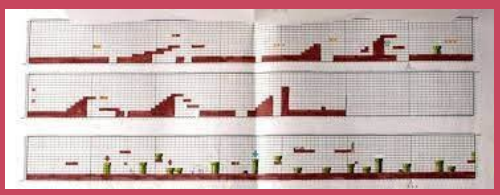
While some games have little or no story, there are also those for which the story is the entire focus of the game.

As the quality of a story doesn't depend on the size of your budget, this is a good way for small game developers to prevail against big companies.

- Create a balance between...
  - Challenge
  - Beautiful, interesting, and immersive environment
  - Avoid confusion and idling
  - Multiple paths
  - Prevent exploitative tactics

Level Designer



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A good game level can be hard to create. It needs to be challenging for the player, but also interesting and immersive. It should avoid confusion; the player should be able to figure out which way to go and what are the available paths at a glance. And it needs to prevent exploits, such as a safe area where the player can shoot at the enemies without risk.

- Create sound effects
- Compose music
- Oversee voice acting
- Manage recordings
- Often outsourced partially or fully, even for small projects

Sound Designer

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The sound designer handles the sound effects and music for the game. When well done, the sound can improve the atmosphere of the game.

This is also a role that is often outsourced, as the audio and music are usually not very tightly integrated with the game.

Game Genres

Platform, Shooter, Fighting, Beat 'em up, Stealth, Survival, Rhythm, Battle Royale, Survival horror, Metroidvania, Adventure, Text adventures, Visual novels, Interactive movie, Real-time 3D adventures, Role-playing video games, Action RPG, Massively multiplayer online role-playing games, Roguelikes, Tactical RPG, Sandbox RPG, First-person party-based RPG, JRPG, Monster Tamer, Construction and management simulations, Life simulation, Vehicle simulation, 4X, Auto battler, Multiplayer online battle arena, Real-time strategy, Real-time tactics, Tower defense, turn-based strategy, Turn-based tactics, Wargame, grand strategy wargame, Racing, Sports, Competitive, Sports-based fighting, massively multiplayer online game, Board game, Casino, Casual, digital collectible card game, Gacha, Horror, Idle, Logic, Party, Programming, Social deduction, Trivia...

Too many to list!

Our Genre

- Casual
- Role Playing Game (RPG)

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For our hands-on game, we'll be making a casual and an RPG game.

For your project, we recommend the same, but if you want to, you can make other types as well.

Casual Games

- Relatively simple to code
- Just need **ONE** innovative and catchy game mechanics

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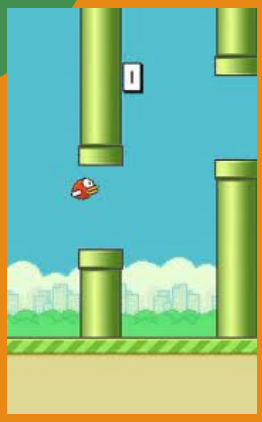
Casual games are the easiest to create. They usually have very little graphics, and only simple game mechanics.

To be successful, a casual game just need to have a single interesting game mechanics.

Casual Games



Flappy Bird
- Made in 2-3 days
- 50 million downloads

2048
- Made in 1 weekend
- 70 million downloads

Cookie Clicker
- Made in 1 night
- Peak of 1.5 million players per day

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These are some examples of successful casual games. As you can see, they are simple, and take very little time to create.

Role Playing Game (RPG)

- Only slightly more difficult to code
- Focus on story and graphics
- Good for developers who are great at writing and drawing
- Much longer to develop, mainly because of graphics and story

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RPG games will take a lot more time to create, but they are only slightly more difficult to code for.

If you can draw or write well, you can easily create a great RPG without needing much coding skills.

Role Playing Game (RPG)

Bastion
- 4 writers / artist
- 2 coders
- 3 million copies sold

Stardew valley
- 1 developer
- 15 million copies sold

Oxenfree
- 4 writers / artist
- 1 coder
- 3 million copies sold

Even for small, indie, RPGs, they usually have a larger team than casual games. But many of the roles are in creating story and art.

Other Genre Popular for Indie Developers

- Deck Builder
  - Easy to build
  - Hard to balance
- Rogue-like
  - High replay value, different everytime
  - Can be difficult to code
- Turn-based Tactics
  - High replay value, many strategies to try
  - AI can be hard to code
- Platformers
  - Niche appeal
  - Hard to design good levels

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These are some of the other genres popular for indie developers.

Deck builders are games where the player fight using cards they collect.

Rougelike are like 2D RPG, but instead of pre-designed levels, it generates new and unique levels in every game.

Turn-based tactics are also like 2D RPG, but with a focus on tactical combat.

Platformers include popular games like mario, but these days, they have a mainly niche appeal among a small group of expert speedrunners.

Game Mechanics

- System of interaction between player and game
  - What the player can do
  - How the game respond
  - How to make progress
- Some examples...

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Some describe game mechanics as “what’s left after you remove the graphics, sound, and story”.

Mario

- Mechanics
  - Move left or right
  - Jump
  - Land on enemies

TimberMan

- Mechanics
  - Tap left or right to chop down tree
  - Avoid being hit by branches

Legend of Zelda

- Mechanics
  - Move
  - Attack with sword (short range, unlimited)
  - Attack with bow (long range, limited arrows)

Dilemmas

- Create conflicts for players to resolve
- Examples:
  - Should I try to stomp on this monster, or jump past it?
  - Should I chop down the tree faster, or go slower and more carefully?
  - Do I use my arrows now or save them for later?

For the game mechanics to be engaging, we need to create dilemmas for the player.

Quality over Quantity

- Choices must be meaningful
- If one choice is clearly better than the other, then it's the same as having no choice
  - eg. Many weapons to choose from, but one is clearly the best
  - eg. No matter what you say to an NPC, the outcome will be the same

6 different guns in the game!

...everybody chooses this one

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Exercise

- As we go through the 2 hands-on games, try to identify...
  - What are the game mechanics?
  - Are there any dilemmas in the game?
  - If so, what are they?

- Keep these in mind as you design your own game on the last day

Game Design Document

- Specify the ideas, mechanics, and other info required to create the game
- Provides a consistent guiding vision during development

Outline

- Game Concept
  - Genre
- Mechanics
  - Rules
  - Dilemmas
- Story
  - Setting
  - Plot
- Game World
  - Areas
  - Characters
  - Obstacles / Opponents
- Interface
  - HUD
  - Controls
  - Menus

Concept

5.1 Concept
The aim of Race'n'Chase is to produce a fun, additive and fast multi-player car racing and crashing game which uses a novel graphics method.

*Later renamed **Grand Theft Auto***

1.1 High Concept
Help a princess escape an evil wizard by using magic portals that open doorways through a trap filled dungeon.

*Eventually redeveloped into **Portal***

Diablo is a rpg wherein a player creates a character and guides him through a dungeon. Actions takes place in an isometric perspective on a turn-based system using the mouse. Many weapons and items can be acquired and used.

MONACO is a thief game. Player can go on solo or multiplayer missions to steal jewelry, art, and cars from the compounds of the rich and famous.

OCEAN'S 11, **CASINO ROYALE**, and **THE ITALIAN JOB** inform the visual style of the game.

MONACO combines the low-level game mechanics of **PACMAN** married with the stealth features of **HITMAN**.

Like the heroes of the best heist movies, players **INCAPACITATE** guards rather than kill them. The guards return to action after a short time

The player can find **DISGUISES** around the environment, which allow them to move freely until they are discovered

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These are examples of concepts from well known games.

Many of these concepts were changed as the development progress, but they provide a clear starting point for the developers to work on.

The concept can be short or long, but they should describe what makes the game fun or unique.

Mechanics (Rules / Dilemmas)

Our core gameplay is exploring murky environments and dealing with hostile creatures (by hiding and/or running).

Take place at night and players will have a flashlight or a candle or torch.

- Lights can keep small creatures at bay but will attract large ones
- Fire can activate torches on walls, creating permanent areas of safety
- Using two-handed items (like some doors) requires putting lights down
- Some creatures are invisible and can only be seen by the shadow they cast

*From **What Nightmares of Edith Finch***

The core game play in “Silent Hill 2” will be a mix of both fighting “monsters” and solving puzzles.

Fighting – Players will be more inclined to avoid battles entirely because of the disturbing nature. Killing one monster in a somewhat abandoned hospital is not enough to know you’re safe.

You control a Russian stacking doll character. If you sneak up behind another doll one size larger than you and press the STACK button, the larger doll will open up, and the smaller doll will jump inside. The player now controls the larger doll.

Every doll has a special ability which may be useful in solving a puzzle, or just fun to perform. Some can tap-dance, and some carry a wrench to fix things. Whenever you stack with a larger doll you now can perform that doll's special ability but not the ability of the inner doll.

*From **Stacking***

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The mechanics section describes how the game is played. Here we have some examples...

In “Edith Finch”, the mechanics is based on exploration and light. The dilemmas presented is clear; lights can be beneficial or harmful.

In “Silent Hill”, the player has the option to fight the monsters, but doing so means confronting the disturbing monsters and won’t necessarily make you safe.

In “Stacking”, the player need to choose which “doll” to stack into, as each doll comes with a unique ability.

Story (Setting / Plot)

Three main forces influencing the game universe:

1. Octopus-like secret society called Majestic 12, with its tentacles touching and guiding seemingly all human endeavors.

2. The computer, Adam, created by Majestic 12, but now with its own machine-dream of an ordered society free of humans.

3. J. C. Denton, the player character, a pawn in the game of world domination who becomes the critical piece on the board.

*Setting for **Deus Ex***

- Plot
  - May be non-existent for some games
- Three-Act Story
  1) Introduce characters and setting. What are their motivations? End by introducing the conflict.
  2) Protagonist confronts the conflicts and the source of the conflicts is presented.
  3) Conflict is resolved; wrap up the story.

Here we have the setting for a game called Deus Ex. It gives the developers a feel of what the universe in the game is like.

For the plot, it is usually many pages long, so no samples, but for this workshop, you don't need to write that much. For some games, you may not even have a plot or setting at all.

One way of writing the plot is the Three-Acts story.

1. We start by introducing the characters, settings, and motivation. Such as what kind of person is the protagonist? A do-gooder? A pragmatic mercenary? This act usually end by presenting the conflict (eg. Family disappear).
2. Second act is where the player confronts the conflict (eg. Search for family), and the source of the conflict is revealed (eg. Ancestral curse).
3. Finally, the conflict is resolved (eg. Curse broken, family returned). Quickly wrap up the story here.

The area describes the playing area for the game.

Characters describes the player characters, NPCs, and antagonist.

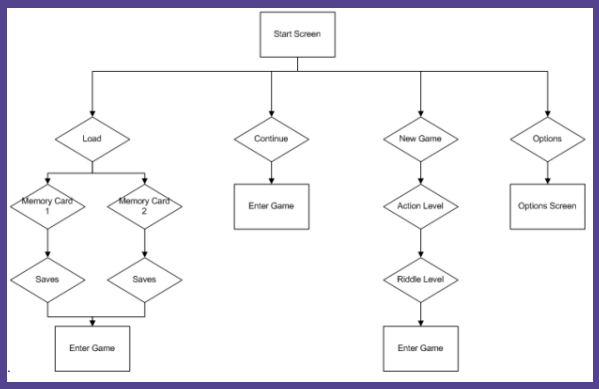
Obstacles / Opponents differs only in that obstacles are largely static. They are what obstruct the player from achieving their objectives. You should provide some details here on what make them different from each other.

Interface

Head-Up Display (HUD)

Controls

Menu



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HUD, Controls, and Menu are largely graphical in nature, so it is often better to draw them out.

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- Visit http://a9i.sg/chij
- Click on the Game Design Document Template Link

- Fill in the Game Design Document before starting on your game