

Game Development Class

1. Introduction

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Presentation of the class

— Who am I?

- * Computer Graphics Researcher at Ubisoft / INRIA Bordeaux (France)
- * Currently doing a PhD in real-time stylized 3D rendering and artistic control
- * Worked at Ubisoft on R6E in 2020-2021
- * Masters in Computer Graphics at the University of Bordeaux
- * L3 at Irvine, California, in Computer Science and Video Games
- * Programming self-taught since 2004, videogames since 2009

– Some things I've worked on

- * AAA - Rainbow 6 Extraction: 3D Programming (Shadows) et XBox Port (Online et Streaming Install)
- * Indie - Kronian Titans: 2.5D Fighting Game
- * Open Source - Castagne: Tool for fighting game creation
- * Rendering - Watercolor: Adaptation and modifications of state of the art algorithms

— Program

- * **First Part** : covering the main subjects of Programming, Design, and Esthetics
 - Programming : Gameplay Programming, Tools Programming, Code Architecture
 - Design : Mechanics and feelings, Project Management, Communication and Decisions
 - Esthetics : 2D/3D, Animation/VFX, Sound Design/Music
- * **Second Part** : More advanced subjects (Shaders, Online, Engine tools...)
 - Online and Netcode
 - 3D Rendering (2 classes: general and stylized rendering)
 - You can suggest topics!

– How to benefit from this class?

- * It's a class that touches upon plenty of topics in a short timespan.
- * I'm going to focus on giving you the keys for understanding and practicing, more than the skills themselves.
- * We will focus on the "how" to apply skills to gamedev, as well as how fields collaborate with each other.
- * With this, you'll be able to start and learn on your own.

— Online class

- * This year, it's recorded and in English!
- * The slides are wordy so that you may refer to them separately and quickly when needed.
- * Interact on the chat during the classes, then on Discord to continue!

— **QUESTION:**

What is your skill level?

– Required skills

- * You don't need to have those skills to begin, I'll assume you might have never done any of this.
- * I'll give a few keys for beginners, but the best would be to also learn those skills on the side, especially programming.
- * The slides aim to help you from beginner to intermediate.
- * It's recommended to make a small game alongside the class (more details later).

– How to follow this class?

- * On my Discord in channel gamedevclass-en-fr
- * Class site : <https://panthavma.com/gamedevclass> (slides and ressources)
- * Every other sunday at 15h00 (Paris time), check the planning a couple weeks in advance
- * Can see the replay and ask questions on Discord later if you can't come

How is a game made?

— QUESTION:

What are the elements of a game?

– What are the elements of a game?

- * **Engine** : Tools and generic algorithms
- * **Code** : Logic and gameplay mechanics
- * **Assets** : Graphics and sounds
- * **Data** : Configuration and balancing

– QUESTION:

Who works on a game?

– Jobs : Organisation

- * I separate game creation in three pillars: Programming, Design, and Esthetics. Added to that is a fourth category, Support.
- * You may in general associate one job to one of the categories, but some may span several (Tech Game Designer, Tech Artist...)
- * Each of these fields requires different skills and must collaborate, which is why it's important to know what others are doing.
- * We'll do a tour of these categories, the associated jobs, as well as some specialities sometimes involved to get a better idea.

– Jobs : Design

- * Define and refine mechanics, and communicate them to their team (documents, reunions...)
- * **Systems Designer** : More focused on mechanics
- * **Level Designer** : Makes the levels themselves (often in graybox)
- * Other Specialities : Combat Designer, Technical Designer, or another system specific to the project

– Jobs : Programming

- * Implement the logic and links needed for the game to work
- * **Gameplay** : Work on mechanics specific to the game
- * **Engine** : Work on the underlying algorithms
- * Other Specialities : 3D Programmer, UI Programmer, Tools Programmer...

– Jobs : Esthetics

- * Make the visual and audio elements
- * **2D Artist** : Draws the graphical elements (sprites, etc.)
- * **Modeler** : Creates the 3D models (and textures depending on project)
- * **Animator** : Creates animations from the models and rigs
- * **Sound Designer** : Creates and adjust the soundscape
- * Other Specialities : Rigger, Texture/Material Artist, UI Artist, SFX Artist, Technical Artist, Composer, Writer, Narrative Designer...

– Postes : Support

- * Help and organize the team during the project
- * **QA / Testers** : Find and document bugs
- * **Producers** : Manage the budget and timetable of the project
- * Other Specialities : Marketing, Manager, Community Manager...

— QUESTION:

What fields interest you?

– Development Phases

- * **Prototyping** : Testing and exploring game concepts (should I make this game?)
- * **Pre-production** : Prepare the base tech and project direction (vertical slice, can I make this game?)
- * **Production** : Make the game itself
- * **Post-Launch** : Follow the project, adjust, new content

— **QUESTION:**

What is your objective in this class (make a game, curiosity, etc)?

Making a game alongside this class

— QUESTION:

Why do you want to make games?

– Why do you want to make games? - My answer

- * Allows for deep creative expression
- * Makes me explore plenty of subjects in depth
- * It's on the cutting edge of technology
- * It's a field that makes use of a lot of skills that I love (code architecture, graphics programming...)

– How to do so next to studies?

- * **Priority to your studies** : The slides and recordings are not going anywhere.
- * If you can do a bit every week, it's good. Better to do regular progress than big sessions.
- * Do it only while it's interesting for you, I don't aim for this to be your part-time job.
- * Aim for smaller projects, even if you do more. Aim for the minimum then iterate upon it.

– Watch for your balance!

- * Gamedev is a field of passion: **watch out for your work-life balance**
- * If you go too hard, you will hate what you do
- * You can't do good games over the long term in bad conditions
- * Crunch culture is still alive, don't fall in it

– How to start?

- * **Design** : Paper prototypes, analyze an existing system
- * **Programming** : Take an engine and follow a tutorial (GDQuest for Godot for instance)
- * **Esthetics** : Choose a field, experiment at small scale
 - 2D Art : Krita, GIMP, Inkscape
 - 3D Art : Blender
 - Sound/Music : LMMS, Audacity, Bfxr
- * If you don't want to do a field, solutions exist: use existing ressources, adjust the design to limit the problem, team up with someone that wants to

– Game engine

- * Most games use a generalist engine.
 - **Godot** : Libre/Open source, close to python, simple and very efficient. (Personnal recommendation for this project)
 - **Unity** : Proprietary, CSharp, very good docs and full asset store.
 - **Unreal** : Proprietary, Blueprint/C++, very advanced tools.
 - **Specialized Engines** : GameMaker, RPGMaker, Castagne, etc. (This class assumes a generalist engine)
- * I don't recommend you make your own engine, as it's very different, long, and separate from creating the game itself.

— Questions

- * Discord : <https://discord.gg/CWjWfC9K9T>
- * Website : <https://panthavma.com/gamedevclass/>
- * Next Time : Gameplay Programming (March 3rd)
- * On the side : Try out the engines and fields, talk with other, think of ideas