Programming Variation Assignment
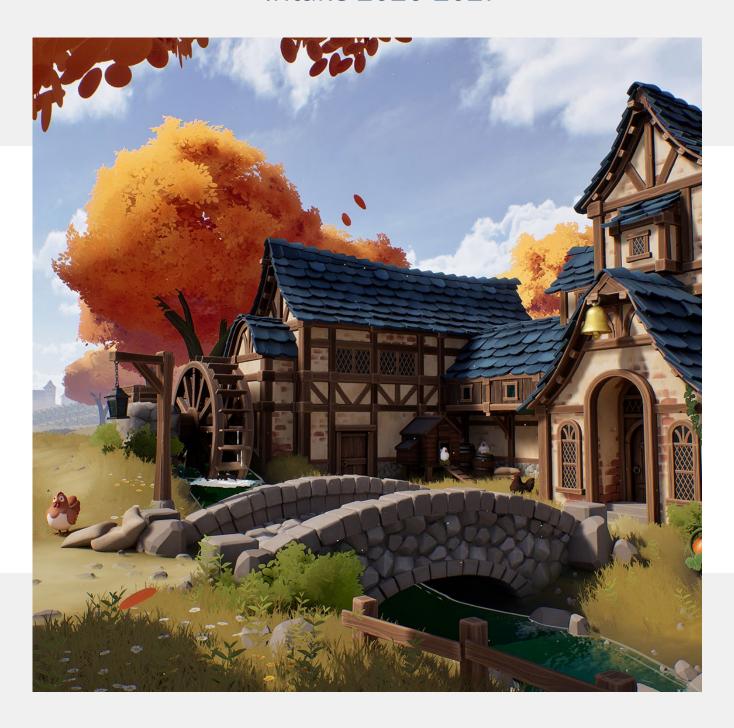
Intake 2026-2027

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Overview

This programming assignment assesses your suitability for our educational program. Don't worry if this is your first experience with programming and game development - we've provided resources to help you succeed.

Getting Started Tutorial: https://www.3dgep.com/cpp-fast-track-1-getting-started

We **strongly recommend** following this tutorial series step-by-step from start to finish. This will take time and dedication, but it's essential preparation.

Important: The PowerPoint template for submitting your assignment becomes available through 'My Online Application' as you follow the application procedure.

Assignment Requirements

Core Requirements

1. **Theme:** Your game must be based on the theme "**Transform**"

    Interpret this theme literally (changing shape, evolving objects) or abstractly (shifting perspectives, metamorphosis, etc.)

2. **Programming Language:** Must be written in **C++**

3. **Graphics:** Must include **graphical gameplay** (not text-only)

4. **Your Own Work:** The game must be your original creation

    o   You may use the tutorial template as a starting point

    o   External libraries are allowed

    o   **Game engines are NOT allowed** (no Unity, Unreal Engine, etc.)

Development Options

Option 1: Tutorial Template

Use the template from the tutorial series mentioned above

Option 2: SFML

Simple and Fast Multimedia Library: https://www.sfml-dev.org/

• Well documented with clear tutorials: https://www.sfml-dev.org/tutorials/2.5/

• Perfect for 2D games and graphics

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Assets and Resources

- **Art Assets:** You may use existing images, 3D models, audio files, or simple shapes (circles, rectangles, etc.)

- **Assessment Focus:** You will be graded on **code quality**, not artistic assets

- **Asset Sources:** Example free assets available at https://itch.io/game-assets

- **Attribution:** Clearly state any external source code, tutorials, or assets you use

Technical Requirements

Development Environment

- Must compile using **Visual Studio Community** (free): https://visualstudio.microsoft.com/vs/community/

- Test in both Debug and Release modes

Code Quality

- Well-structured and organized

- Properly commented to explain your logic

- Easy to read and understand

Game Instructions

- Include a **readme.txt** file explaining:
    - How to play the game
    - Which keys/buttons to use
    - Any special instructions

Submission Requirements

What to Submit

1. **Complete Project Zip File** containing:
    - All source code files (.cpp, .h, etc.)
    - All assets (images, sounds, etc.)
    - **All dependencies and libraries** (see critical note below)
    - Project files (Visual Studio solution/project files)
    - readme.txt with game instructions

2. **PowerPoint Presentation** (template provided in application portal)

🚨 CRITICAL: Including Dependencies

If you use SFML or any external libraries:

- You **MUST** include the library files in your zip

- Include both the header files (.h) and library files (.lib/.dll)

- Your project should compile and run without requiring us to download anything extra

- Common mistake: Forgetting to include SFML files, causing compilation errors

💡 Best Practice: Install Dependencies in Your Project Folder Instead of installing SFML system-wide, install it directly in your project folder:

- Create a folder like MyGame/SFML/ or MyGame/libs/SFML/

- Extract SFML files into this folder within your project

- Set up your Visual Studio project to look for libraries in this local folder

- This ensures everything is self-contained and included when you zip your project

Why this works better:

- Guarantees all dependencies are included in your zip file

- Avoids path issues on different computers

- Makes your project completely portable

- Eliminates the most common submission problem

Before Submitting:

1. Extract your zip file to a completely new folder

2. Try to compile and run your game from this fresh location

3. If it doesn't work, you're missing dependencies

4. Fix the issue and test again

Testing Your Submission

- **Test your zip file before uploading**

- Extract to a new location on a different computer if possible

- Ensure the game compiles and runs in both Debug and Release mode

- Upload the zip file at the same time as your PowerPoint

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Resources for Beginners

If you're new to programming, we recommend:

Online Tutorial: https://www.3dgep.com/cpp-fast-track-1-getting-started

Recommended Book: "Beginning C++ Through Game Programming (4th Edition)" by Michael Dawson

- ISBN: 9781305109919

- Available at: https://books.google.nl/books?id=pd0OBAAAQBAJ

- Builds strong C++ foundation (though doesn't cover graphics)

What We're Looking For

We understand most of you are new to programming. Here's what will make your submission stand out:

Essential Elements

- **Complete submission** that addresses all requirements

- **Clear evidence of effort** - we want to see that you've been genuinely engaged with the task and put in dedicated time

- **Fundamental programming concepts** properly implemented (variables, loops, conditions, functions)

- **Working game** that compiles and runs without errors

Going Above and Beyond

- **Extra features** you've added beyond the basic requirements

- **Self-directed learning** - evidence you've explored topics or techniques not covered in the tutorials

- **Iterative improvement** - showing you've tested, refined, and improved your code through multiple versions

- **Creative problem-solving** - finding solutions to challenges you encountered
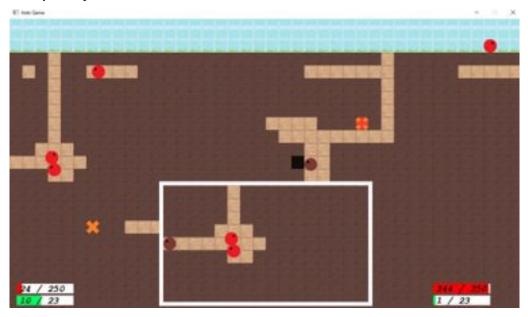
What Success Looks Like

- You can explain the choices you made in your code

- Your game demonstrates understanding of basic programming principles

- You've shown curiosity by experimenting with additional features or techniques

- There's evidence you've learned from mistakes and improved your approach

Remember: We do NOT expect commercial-quality games. We're looking for evidence that you can learn, adapt, and apply programming concepts effectively.

Example Project

"Ants" - An example project from a previous year

Questions?

If any instructions are unclear, please contact us immediately. We're here to help you succeed!

Submission Checklist

Before submitting your assignment, make sure you can check off every item:

✅ **Game Requirements**

- [ ] Game theme is based on "Transform"
- [ ] Written in C++ (no game engines used)
- [ ] Has graphical gameplay (not text-only)
- [ ] Compiles successfully in Visual Studio Community
- [ ] Runs without errors in both Debug and Release mode
- [ ] Includes readme.txt with game instructions and controls

✅ **Code Quality**

- [ ] Code is well-structured and organized
- [ ] Code includes helpful comments explaining your logic
- [ ] Variable and function names are clear and meaningful
- [ ] No major compilation warnings

✅ **Complete Submission Package**

- [ ] All source code files (.cpp, .h, etc.) included
- [ ] All assets (images, sounds, etc.) included
- [ ] **All dependencies and libraries included** (especially SFML if used)
- [ ] Visual Studio project/solution files included
- [ ] Everything is in a single zip file

✅ **Testing Your Submission**

- [ ] Extracted zip file to a completely new folder
- [ ] Successfully compiled from the new location
- [ ] Game runs correctly from the new location
- [ ] Tested both Debug and Release configurations
- [ ] No missing files or broken dependencies

✅ **Documentation and Attribution**

- [ ] readme.txt clearly explains how to play
- [ ] All external assets, libraries, or code are properly attributed
- [ ] Any tutorials or resources used are acknowledged

✅ **Final Check**

- [ ] PowerPoint presentation completed (from application portal)
- [ ] Both zip file and PowerPoint ready to upload simultaneously
- [ ] Game represents your best effort and demonstrates learning

Good luck!

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