# Game Programming in C++: Hackpack

September 16, 2021 / 7:30 PM - 9:00 PM ET

## Description

This interactive workshop will explain the process of creating games in C++ with a custom engine. We will discuss the design and implementation of a 2D game and work together to implement some features. A complete understanding of the code will require some advanced C++ knowledge, but anyone with an intermediate understanding can be productive with the knowledge this workshop provides.

## Learning Outcomes

This workshop will enhance your modern C++ and game programming skills. More broadly, it will provide tools for thinking about and architecting code in complex programs like video games.

- Create a 2D game in C++ from scratch
- Learn practical applications of design patterns
- Gain strategies for architecting medium-to-large sized codebases

## Prerequisite Knowledge

In order to get the most out of this workshop you should be comfortable with the following concepts:

- C++
    - Object-oriented programming
    - Memory management and RAII
    - Standard library containers

## Pre-Workshop Checklist

Before the workshop, please make sure you complete the following items:

- Please ensure you have a text editor installed
- Please make sure to install a C++ compiler

- ○ On Windows, you can follow this guide:
    https://code.visualstudio.com/docs/cpp/config-mingw
  - ○ On Mac, you can *brew install gcc* if you have https://brew.sh/ installed
  - ○ On Linux, you might be able to use the preinstalled version of G++ but I recommend installing G++10 from your favorite package manager
- ● Clone the game template repo:
  https://github.com/goodpaul6/hack-the-north-game
- ● Compile the game using *make*
  - ○ On windows, the command will be mingw32-make
- ● Run the *game* executable from the root of the repo

## Timeline (1 hour)

| Time | Module | Description |
|------|--------|-------------|
| 10 min | Setup & Structure | Make sure that the game compiles, runs, and we can make tweaks. |
| 20 min | Adding a New Enemy | We make use of existing components to add a new enemy to the game. |
| 20 min | Creating a Component | Create a component that can be used for health regeneration. |
| 30 min | Adding an Engine Feature | We implement particle systems. |
| 10 min | Closing Remarks | Discussing how to further extend the engine and build on the game. |

## Workshop Lead Contact

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## Additional Resources

### Hack the North Resources

#### Hack the North 2021 Event Schedule

Check this out to stay up-to-date on activities, workshops, and other key happenings this weekend.

### Workshop-Specific Resources

#### Game Programming Patterns

A free online ebook that goes over the motivation/details of a lot of the architectural choices we make in this engine:

https://gameprogrammingpatterns.com/

#### CppCon Talks

The CppCon youtube channel uploads all the talks given at the largest annual C++ conference. Many of these talks discuss C++ features and their applications. A great resource for learning advanced C++:

https://www.youtube.com/user/CppCon

#### GDC Talks

The GDC (Game Developers Conference) youtube channel and website also provide useful talks that discuss many aspects of making video games, including programming:

https://www.youtube.com/c/Gdconf