

ChatGPT is an artificial intelligence model that was developed by OpenAI. It allows for conversations between the user and the AI model where you can ask questions and you are then provided answers based on the question(s) you ask. For this blogpost I asked ChatGPT to come up with a medium sized project in which I could perform a code review of since that was one of the options for the blogpost. I was a bit anxious with what I was going to get as an answer since there are SO MANY projects that could be made, but ChatGPT decided that an automatic task scheduler would be a good project for me. Along with telling me a project idea, ChatGPT gave me a project description as well as a project development plan and a code review template for when I was done with it. I was a bit shocked because I didn't expect all of this information to be given to me with just one simple question to start.

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I need to do a project in c++ and this is the prompt, can you help me with any ideas for this: Use ChatGPT (or some similar AI system) to generate code for a medium sized project. The project should be large enough that you need to go back and forth with the system a number of times to produce the final product. Now, do a careful code review about what about this code worked, what did not work, and how the code could have been better written in regards to style, efficiency, modularity, and/or readability. Provide any other comments that you may have about this experience.



Creating a medium-sized project using an AI system like ChatGPT can be an interesting and educational endeavor. Below, I'll outline a project idea, guide you through its development with AI assistance, and then provide a template for your code review.

Project Idea: Automated Task Scheduler

Project Description:

Create an automated task scheduler in C++ that allows users to input tasks with different priorities and deadlines. The program should optimize task scheduling based on the provided inputs. The AI system (ChatGPT) will assist you in generating the core functionality of the scheduler.

After reading the first response I was intrigued what to ask the AI next. I wanted an in depth explanation about task schedulers but I figured it would be best to learn about it from what code would be generated. At this point I prompted for the generation of code as I would need to see if it works properly, hoping that it does but with some errors so I can go back and forth with the AI to finally get the code working properly.

I like this idea of an automatic task scheduler. could you please generate some code for me in c++ so I can do what was described in the project description and the project development process



With this response I got a lot of code generated and I understood a decent amount of it but not enough to completely understand what was going on. CODE IS LINKED IN THE CHATGPT LINK AS IT IS TOO LONG TO PUT IT AS PICTURES. This snippet below is part of the response that I got.

In this code, you can:

1. Add tasks with a name, priority, and deadline.
2. Schedule tasks by sorting them first by priority and then by deadline.
3. Display the scheduled tasks.

This is just a starting point, and you can build upon it by implementing more advanced scheduling algorithms and error handling, as described in the project development process.



The first three parts made sense to me as this is a task scheduler. I was a bit curious about the scheduling algorithms that I could use as well as the error handling because I would need to use these for further versions of the code that would be produced. At this point I asked ChatGPT to help me define some of the data structures that I would use in this project as that was one of the parts of the development process it outlined from my first prompt.



Certainly! Defining the data structures for your automated task scheduler project is a crucial step. Below are data structure definitions for tasks, a priority queue, and a basic representation of your project's data.

1. Task Structure:

You can define a structure or class to represent tasks, including their name, priority, and deadline. Here's an example in C++:

```
cpp Copy code

struct Task {
    std::string name;
    int priority;
    int deadline;

    Task(const std::string& n, int p, int d) : name(n), priority(p), de
};
```

In this structure, each task has a name (as a string), priority (as an integer), and a deadline (as an integer).

1. Priority Queue for Tasks:

A priority queue is an essential data structure for scheduling tasks based on their priority and deadline. You can use `std::priority_queue` from the C++ Standard Template Library (STL). Here's an example of how to declare and initialize a priority queue for tasks:

```
cpp Copy code

#include <queue>

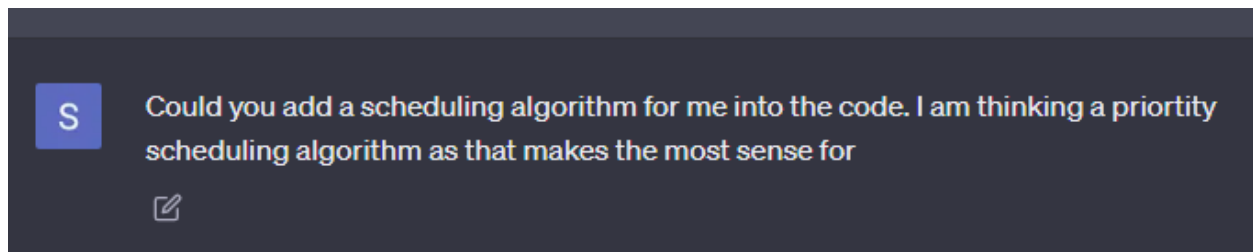
std::priority_queue<Task, std::vector<Task>, CompareFunction> taskQueue
```

In this example, you'll need to define a `CompareFunction` that specifies how tasks should be compared to determine their priority within the queue. You can create a custom comparison function that compares tasks based on their priorities or deadlines.

After receiving this and understanding what exactly is going on with my code I then asked ChatGPT to help me set up an IDE so that I can execute this code. Personally, I know how to

but other readers of this blogpost might not and as such a link is provided with a guide on how to set up an IDE to execute code, the example used by ChatGPT is Visual Studio.

Upon the setup of the IDE I asked ChatGPT if the code it gave me from earlier is sufficient enough to complete this blogpost requirement and it said that it was just a basic starting point, since it doesn't include a scheduling algorithm. It also let me know that the code above only allowed for input, storing, and sorting them but doesn't actually actively schedule tasks so that it takes into consideration the actual deadlines and priorities of them. It then let me know that I need to implement a scheduling algorithm and gave me a few different ones to choose from such as Priority Scheduling, Deadline Scheduling, or Shortest Job First (SJF). I decided to go with the Priority Scheduling as it made the most sense for me to use in the code.



ChatGPT was then able to generate code for me that included parts of the previous example along with the new priority scheduling algorithm. This code was a bit complicated to understand at first but it made sense after looking at it for a few minutes. According to ChatGPT this rendition of the code allowed me to sort tasks based on the priority values in descending order, which means that tasks with higher priorities would be scheduled first. ChatGPT also mentioned that this was a "simplified example". After reading this I then asked for a non-simplified version as there is not any specific requirement that I have to abide by.

This new version that ChatGPT outputted was what I was looking for. Or so I thought. This new version worked except when I tried adding multiple tasks to the list it gave me errors on top of errors. I was confused but somewhat happy since this meant I could go back and forth with the AI now to pinpoint where it went wrong on this edition. According to ChatGPT there was a vector that wasn't properly updated so it fixed it.

I thought all was good until I ran this code and I couldn't fix the same error which was confusing since I thought it was fixed by this point. At this point ChatGPT realized it messed up again and then corrected my code by modifying a function that helps with tasks.

After this update I thought all was good. I was in the clear. Well turns out I was wrong but thankfully this was the last time I was wrong. I noticed there was an issue with when the priorities of the created tasks were the same and then that was fixed by another prompt I made.

is there a reason why only study shows up on the task list? is it because they have the same priority? i would like this fixed please



I apologize for the oversight. The issue is that the code, as written, schedules tasks based on their priorities but doesn't account for tasks with the same priority. This causes only one task to appear in the scheduled list when tasks have the same priority.

To ensure that all tasks with the same priority are scheduled, you can modify the scheduling logic as follows:

After this prompt I finally got code which works exactly how I wanted it to. I then proceeded to ask for some documentation about this code as documentation is always necessary as it makes it easier to read and for others to understand what is being written.

I learned a lot from this experience of writing this blogpost. I wasn't very familiar with ChatGPT in general but now I can say I have a better understanding on how to use it properly with helping me with code when applicable. I must admit that although the code is readable and the documentation is present I think the code can be more efficient than what is currently generated.

HERE IS A LINK TO THE CONVERSATION

<https://chat.openai.com/share/c553d5c1-3c73-4ffa-aae3-698e002ccdef>