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Assignment 2 - CS Dungeon!

Your task in assignment 2 is to create a dungeon crawler game, where you will get to design a map of connected dungeons filled with monsters, items, and a final boss at the end to defeat! You will get to play as either a Fighter or a Wizard, using your special skills and stats to defeat these monsters and beat the game!

The game consists of a setup phase, where you add dungeons and items, and a gameplay phase, where you as the player will get to move between dungeons, fight monsters and collect items that can make you even stronger!

You can read about the history of dungeon crawler games here.

Overview

COMP1911 Students

If you are a COMP1911 student, you will be assessed on your performance in **stages 1 and 2 ONLY** for this assignment, which will make up the performance component of your grade. Style will be marked as usual and will make up the remaining 20% of the marks for this assignment. You are NOT required to attempt stages 3 and 4. You may attempt the later stages if you wish, but you will not be awarded any marks for work beyond stage 2.

COMP1511 Students

If you are a COMP1511 student, you will be assessed on your performance in **stages 1 through 4**, which will make up the performance component of your grade. Style will be marked as usual and will make up the remaining 20% of the marks for this assignment.

Assignment Structure

This assignment will test your ability to create, use, manipulate and solve problems using linked lists. To do this, you will be implementing a dungeon crawler game, where the dungeons are represented as a linked list, stored within a map. Each dungeon contains a list of items. The map also contains a player struct, which also contains a list of items.

We have defined some structs in the provided code to get you started. You may add fields to any of the structs if you wish.

> NOTE:
>
> There are 5 structs used in this assignment. You do not need to know everything from the beginning, each stage of the assignment will walk you through what you need to know. The easiest way to understand these structs is to get stuck into **Stage 1.1** where you get to create some!

+ Structs

The following enum definitions are also provided for you. You can create your own enums if you would like, but you should not modify the provided enums.

+ Enums

> HINT:
>
> Remember to initialise every field inside the structs when creating them (not just the fields you are using at that moment).

Getting Started

There are a few steps to getting started with CS Dungeon.

1. Create a new folder for your assignment work and move into it. You can follow the commands below to link and copy the files.

```
$ mkdir ass2
$ cd ass2
```

2. There are 3 files in this assignment. Run the following command below to download all 3, which will link the header file and the main file. This means that if we make any changes to `cs_dungeon.h` or `main.c`, you will not have to download the latest version as yours will already be linked.

```
$ 1511 fetch-activity cs_dungeon
```

3. Run `1511 autotest cs_dungeon` to make sure you have correctly downloaded the file.

```
$ 1511 autotest cs_dungeon
```

> WARNING:
>
> When running the autotest on the starter code (with no modifications), it is expected to see failed tests.

4. Read through the rest of the introductory specification and **Stage 1**.

Starter Code

This assignment utilises a multi-file system. There are three files we use in CS Dungeon:

- **Main File (`main.c`):** This file handles **all input scanning and error handling** for you. It also tests your code in `cs_dungeon.c` and contains the `main` function. You don't need to modify or fully understand this file, but if you're curious about how this assignment works, feel free to take a look. **You cannot change `main.c`.**
- **Header File (`cs_dungeon.h`):** contains defined constants that you can use and function prototypes. It also contains header comments that explain what functions should do and their inputs and outputs. *If you are confused about what a function should do, read the header file and the corresponding specification.* **You cannot change `cs_dungeon.h`.**
- **Implementation File (`cs_dungeon.c`):** contains stubs of functions for you to implement. This file does not contain a `main` function, so you will need to compile it alongside `main.c`. *This is the only file you may change. You do not need to use `scanf` or `fgets` anywhere.*

> NOTE:
>
> **Function Stub**: A temporary substitute for yet-to-be implemented code. It is a placeholder function that shows what the function will look like, but does nothing currently.

The implementation file `cs_dungeon.c` contains some provided functions to help simplify some stages of this assignment. These functions have been fully implemented for you and should not need to be modified to complete this assignment.

These provided functions will be explained in the relevant stages of this assignment. **Please read the function comments and the specification as we will suggest certain provided functions for you to use.**

> WARNING:
>
> Do not change the return type or parameter amount and type of the provided function stubs. `main.c` depends on these types and your code may not pass the autotests otherwise, as when testing we will compile your submitted

`cs_dungeon.c` with the supplied `main.c` .

NOTE:

If you wish to create your own helper functions, you can put the function prototypes at the top of `cs_dungeon.c` and implement it later in the file. You should place your function comment just above the function definition.

How to Compile CS Dungeon

+ Compiling CS Dungeon

Reference Implementation

To help you understand the expected behaviour of CS Dungeon, we have provided a reference implementation. If you have any questions about the behaviour of your assignment, you can check and compare yours to the reference implementation.

To run the reference implementation, use the following command:

```
$ 1511 cs_dungeon
```

+ Example Usage

The easiest way to understand how this assignment works is to play a game yourself! Below is example input you can try by using the reference solution.

+ Example Game

Allowed C Features

In this assignment, there are no restrictions on C Features, except for those in the Style Guide. If you choose to disregard this advice, you must still follow the Style Guide..

You also may be unable to get help from course staff if you use features not taught in COMP1511. Features that the Style Guide identifies as illegal will result in a penalty during marking. You can find the style marking rubric above. **Please note that this assignment must be completed using only Linked Lists . Do not use arrays in this assignment. If you use arrays instead of linked lists you will receive a 0 for performance in this assignment**.

Banned C Features

In this assignment, **you cannot use arrays for the list of dungeons nor the lists of items** and cannot use the features explicitly banned in the Style Guide. If you use arrays in this assignment for the linked list of dungeons or the linked lists of items you will receive a **0** for performance in this assignment.

FAQ

+ FAQ

Game Structure

This game consists of a setup phase and a gameplay phase.

You will be implementing both the setup phase and gameplay phase throughout this assignment, adding more features to both as you progress. By the end of **stage 1.4****you will have implemented parts of both setup and gameplay enough to play a very basic game.

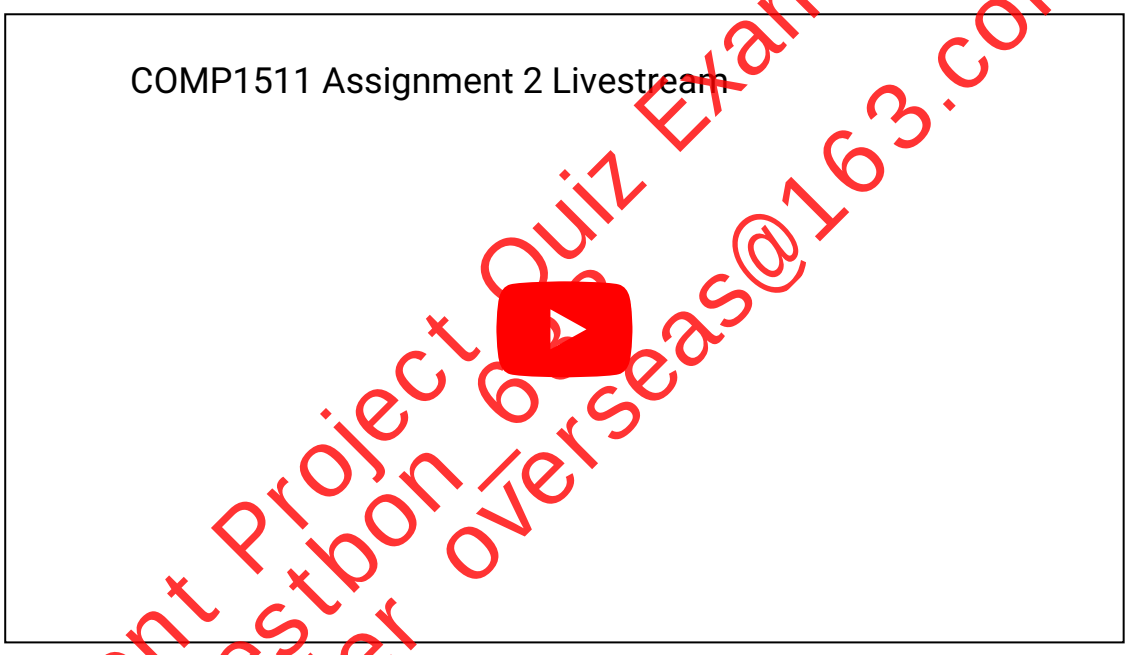
The game is ended either by the user entering `Ctrl-D`, the win condition being met, or the player running out of health points. The program can also be ended in the setup phase with `Ctrl-D` or `q`.

Your Tasks

This assignment consists of four stages. Each stage builds on the work of the previous stage, and each stage has a higher complexity than its predecessor. You should complete the stages in order.

> NOTE:
>
> You can assume that your program will **NEVER** be given:
>
> - A non-existent command.
> - Command arguments that are not of the right type.
> - An incorrect number of arguments for the specific command.
>
> Additionally, commands will always start with a `char`. **All scanning and most printing will be handled for you in `main.c`, so you should not need to worry about the above.**

A video explanation to help you get started with the assignment can here found here:



Stage 1 ●○○ Stage 2 ●●○ Stage 3 ●●● Stage 4 ●●● Extension Tools

Stage 1

For Stage 1 of this assignment, you will be implementing some basic commands to set up your dungeon map and play a simple game!

Stage 1.1 Creating the Map, a Dungeon, and the Player

In Stage 1.1, you'll implement functions that allocate memory using `malloc` and initialise all fields for `struct map`, `struct dungeon`, and `struct player`.

You will find the following unimplemented function stubs in `cs_dungeon.c`:

+ Function Stubs

In `main.c`, `create_map` is called after reading the map name and amount of points required to win, and `create_player` is called after reading the player name and class. `create_dungeon` will be called by you, in `cs_dungeon.c`, whenever a dungeon should be added to the map.

Your task is to implement the `create_map` function, so that it:

1. Creates a new `struct map` (using `malloc`).
2. Copies the `name` and `win_requirement` arguments into the corresponding struct fields.
3. Initialises all other fields to a reasonable value.
4. Returns a pointer to the newly created `struct map`.

You also then need to complete the `create_player` function, so that it:

1. Creates a new `struct player` (using `malloc`).
2. Copies the `name` and `class_type` arguments into the corresponding struct fields.
3. Initialises `health_points`, `shield_power`, `damage` and `magic_modifier` based on the chosen class (listed below).
4. Initialises all other fields to some reasonable value.
5. Returns a pointer to the newly created `struct player`.

+ Class Stats

You also then need to complete the `create_dungeon` function, so that it:

1. Creates a new `struct dungeon` (using `malloc`).
2. Copies the `name`, `monster`, `num_monsters` and `contains_player` arguments into the corresponding struct fields.
3. Initialises all other fields to some reasonable value.
4. Returns a pointer to the newly created `struct dungeon`.

> NOTE:
>
> The `boss` field can be set to `NULL` when creating a dungeon. The final boss will be added in **Stage 1.5**.

Clarifications

- Initially there are no dungeons in the map.
- Initially there are no items in a dungeon, and no items in the player's inventory.
- No error handling is required for **Stage 1.1**.

Testing

There are no autotests for **Stage 1.1**.

Instead, you may want to double check your work by compiling your code using `dcc` and making sure there are no warnings or errors. Make sure that **every struct field** is initialised. If there are any errors in your code, they will become clear in **Stage 1.2** onwards.

+ Optional Testing File

Stage 1.2 Appending Dungeons

Now it's time to start building out your dungeon map! When you run your program, `create_map` and `create_player` will be called for you by `main.c`. Then, the setup phase loop will start, where you can begin to create your own custom dungeon map!

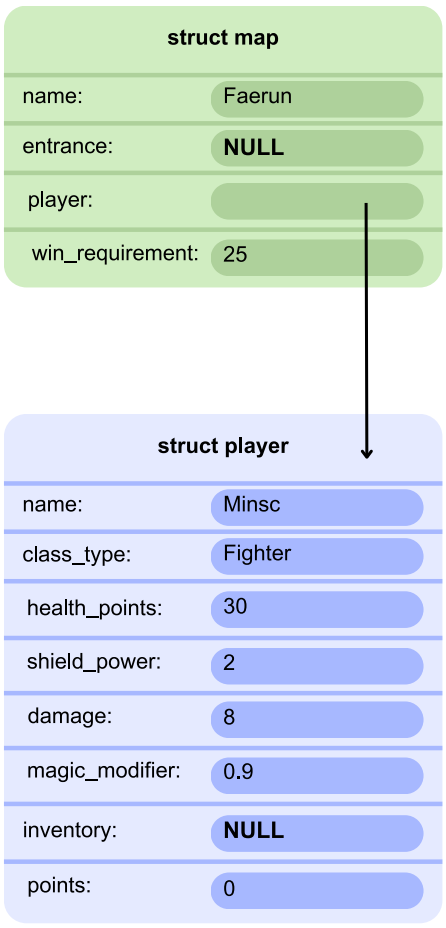
The first command you will be implementing is the Append Dungeon command.

Command: Append Dungeon

```
Enter Command: a [name] [monster] [num_monsters]
```

> NOTE:
>
> This input is all already scanned in for you in the command loop function (`command_loop`) located in `main.c`.

Before appending any dungeons, the map's list of dungeons will be empty, looking something like this:



After appending one dungeon, there will be one dungeon in the map, so that it looks something like this:

Any other dungeons added via this command will all be appended to the end of the list, i.e. a tail insertion, looking something like this:

Your task is to implement the function `append_dungeon` in `cs_dungeon.c` which will append a newly created dungeon to the end of the map's list of dungeons, where `entrance` is the first dungeon in the list.

Additionally, the first dungeon in the map, i.e. what `entrance` points to, is where the player should start, so it should contain the player. If a dungeon contains the player, the `contains_player` field should be set to `1`. Otherwise, it should be set to `0`.

You will need to:

1. Create a new dungeon using your `create_dungeon` function from **Stage 1.1**, using the parameters provided.
2. Append the new dungeon to the end of the list of dungeons stored in the map, which starts at the `entrance` (head of the list), i.e. perform a tail insertion.

> HINT:
>
> Make sure to read the function prototype for `append_dungeon` in `cs_dungeon.h` for clear explanations regarding function parameters and their corresponding functionalities.

> NOTE:
>
> The `map` contains a pointer to the head of the list of dungeons, called `entrance`. This is the list you will append the new dungeon to.

This function returns an `int` - this value indicates whether or not the appending was successful or not. We will handle error checking in **Stage 1.5**, so for now you can return the constant `VALID` (defined in `cs_dungeon.h`). `main.c` will handle all input and output (including any `printf`, `scanf`, or `fgets` calls) for you already.

Clarifications

- The first dungeon in the map is where the player should begin.
- The `boss` field can be left as `NULL`. The final boss will be added in **Stage 1.5**.
- No error handling is required for **Stage 1.2**

Examples

+ Example 1.2.1: Add one dungeon

+ Example 1.2.2: Add many dungeons

NOTE:

You may like to autotest this section with the following command:

```
1511 autotest-stage 01_02 cs_dungeon
```

Stage 1.3 - Printing the Dungeon Map

Now we want to be able to display all dungeons in the map and their basic details.

Command: Print dungeons

```
Enter Command: p
```

When the `p` command is run, your program should print out all of the dungeons stored in the map and their basic information. This is each dungeon's position (in order of head to tail, indexed from 1), name, if the boss is present, and if the player is currently in that dungeon. This command can be called in both the setup phase and the gameplay phase, `main.c` will handle this for you.

There is one function stub to implement for **Stage 1.3**, called `print_map` in `cs_dungeon.c`.

Four functions have been provided for you in `cs_dungeon.c` to help print the list of dungeons:

- `print_empty_map`: prints an empty map message.
- `print_map_name`: prints a message saying "Map of [name]".
- `print_basic_dungeon`: prints the basic details of a given dungeon.
- `print_connection`: prints a tunnel connecting adjacent dungeons.

NOTE:

The last dungeon should have no tunnel after it.

You will need to:

1. Print every dungeon in the list stored in the map, using the provided printing functions.

Clarifications

- The map should only be empty in the setup phase, before any dungeons have been added.
- No error handling is required for **Stage 1.3**

Examples

+ Example 1.3.1: Print a map with one dungeon

+ Example 1.3.2: Print a map with multiple dungeons

+ Example 1.3.3: Print a map with no dungeons

NOTE:

You may like to autotest this section with the following command:

```
1511 autotest-stage 01_03 cs_dungeon
```

Stage 1.4 Adding the Final Boss

So that we can move on to the gameplay component of CS Dungeon, we need to add a boss-level monster to the final dungeon in the map.

When `q` command is used in the setup phase, the player will then be prompted to enter the item type required to defeat the final boss:

```
Please enter the required item to defeat the final boss: [item type]
```

Then, the function `final_boss` in `cs_dungeon.c` will be called, which you will need to implement in this stage. This function returns an `int` - this value indicates whether or not adding the final boss was successful or not. We will handle error checking in **Stage 1.5**, so for now you can return the constant `VALID` (defined in `cs_dungeon.h`).

The map should always have at least one dungeon in it when it is time to add the final boss, and throughout the gameplay phase (the one the player is in).

The final boss's stats are as follows:

Health Points	35
Damage	10
Points	20

There are two functions to implement in **Stage 1.4**, `create_boss` and `final_boss`. You will need to:

1. Create a `struct boss` (using `malloc`) similarly to the create functions in **Stage 1.1** in the `create_boss` function.
2. Add this final boss to the very last dungeon in the map, specifically to the dungeon's `boss` field in the `final_boss` function.

After you have completed this stage, you will be able to play a very basic game of CS Dungeon, where you can add dungeons, a final boss, and print the map!

Clarifications

- There will always be at least one dungeon in the before moving to the gameplay phase (`main.c` checks for this).
- No error handling is required for **Stage 1.4**.

Examples

+ Example 1.4.1: Map with many dungeons, add a final boss

NOTE:

You may like to autotest this section with the following command:

```
1511 autotest-stage 01_04 cs_dungeon
```

Stage 1.5 Handling Errors

Now we need to make sure that when setting up our map, that any invalid dungeon or boss inputs are handled correctly. From **Stage 1.5** onwards, you will need to do error checking to ensure correct inputs when creating a dungeon and will need to edit your code from earlier stages.

You will need to check for the following errors in your `append_dungeon` and `final_boss` functions:

- Invalid name,
- Invalid monster type,
- Invalid monster amount,
- Invalid required item,

and if they are, return the corresponding constant. You're currently returning `VALID` by default.

The error constants are defined in `cs_dungeon.h`, and you can refer to the header comments for `append_dungeon` and `final_boss` for which constants to return in each case.

To check whether each field is valid or not, you must perform the following checks **in the below order**:

Appending dungeons

- `name` is invalid if it is already being used by another dungeon in the map.
- `monster` is invalid if it is not one of `SLIME`, `GOBLIN`, `SKELETON` or `WOLF`.
- `num_monsters` is invalid if it is not between 1 and 10 (inclusive).

> NOTE:
>
> If a dungeon is invalid, it should not be added to the list of dungeons in the map.

Creating the final boss

- `required_item` is invalid if it is not one of `PHYSICAL_WEAPON`, `MAGICAL_TOME`, `ARMOR`, `HEALTH_POTION` or `TREASURE`.

> NOTE:
>
> If the required item when making the final boss is invalid, `main.c` will keep asking for a new required item until it is valid.

> HINT:
>
> The function `strncmp` will be useful to check if `name` has been used before.
>
> You can see how to use `strncmp` from the built-in Linux manual pages by typing `man 3 strncmp` into your terminal.

Examples

+ Example 1.5.1: Attempting to append invalid dungeons and boss required item

> NOTE:
>
> You may like to autotest this section with the following command:
>
> ```
> 1511 autotest-stage 01_05 cs_dungeon
> ```

Stage 1.6 - Checking Player Stats

We need a way to check what the player's statistics are while we are playing our game. So in **Stage 1.6** you will be implementing a feature that checks the player's current stats, specifically:

- what dungeon they are in,
- their health points,
- shield power,
- damage,
- magic modifier,
- points collected,
- and what items they have in their inventory.

Command: Check Player Stats

```
Enter Command: s
```

There is one function to implement for **Stage 1.6**, called `player_stats` in `cs_dungeon.c`.

There are 3 helper functions provided for you in `cs_dungeon.c` to help you print everything:

- `print_player` : prints the details about the player.
- `print_no_items` : if there are no items in the player's inventory, this should be printed.
- `print_item` this prints the details of a given item. This does not need to be used until **Stage 3**, when items are added.

You will need to:

1. Find the above listed information about the player.
2. Use the provided printing functions to print the player's stats.

Clarifications

- If the map is empty e.g. in the setup phase before adding any dungeons, then `NULL` should be given as the dungeon name to `print_player`.
- Items are not added until **Stage 3**, so you do not need to use `print_item` until then. Instead, use `print_no_items` for now.
- There is no error handling in **Stage 1.6**.

Examples

+ Example 1.6.1: Checking player stats in gameplay phase

+ Example 1.6.2: Checking player stats in setup phase

NOTE:

You may like to autotest this section with the following command:

```
1511 autotest-stage 01_06 cs_dungeon
```

Testing and Submission

Remember to do your own testing

Are you finished with this stage? If so, you should make sure to do the following:

- Run `1511 style` and clean up any issues a human may have reading your code. Don't forget -- **20%** of your mark in the assignment is based on style and readability!
- Autotest for this stage of the assignment by running the `autotest-stage` command as shown below.
- Remember -- *give early and give often*. Only your last submission counts, but why not be safe and submit right now?

```
$ 1511 style cs_dungeon.c
$ 1511 autotest-stage 01 cs_dungeon
$ give cs1511 ass2_cs_dungeon cs_dungeon.c
```

Assessment

Assignment Conditions

- **Joint work** is **not permitted** on this assignment.

  This is an individual assignment.

  The work you submit must be entirely your own work. Submission of any work even partly written by any other person is not permitted.

  The only exception being if you use small amounts (< 10 lines) of general purpose code (not specific to the assignment) obtained from a site such as Stack Overflow or other publicly available resources. You should attribute the source of this code clearly in an accompanying comment.

  Assignment submissions will be examined, both automatically and manually for work written by others.

  Do not request help from anyone other than the teaching staff of COMP1511.

  Do not post your assignment code to the course forum - the teaching staff can view assignment code you have recently autotested or submitted with give.

  Rationale: this assignment is an individual piece of work. It is designed to develop the skills needed to produce an entire working program. Using code written by or taken from other people will stop you learning these skills.

- The use of **code-synthesis tools**, such as **GitHub Copilot**, is **not permitted** on this assignment.

  The use of **Generative AI** to generate code solutions is not permitted on this assignment.

  Rationale: this assignment is intended to develop your understanding of basic concepts. Using synthesis tools will stop you learning these fundamental concepts.

- **Sharing, publishing, distributing** your assignment work is **not permitted**.

  Do not provide or show your assignment work to any other person, other than the teaching staff of COMP1511. For example, do not share your work with friends.

  Do not publish your assignment code via the internet. For example, do not place your assignment in a public GitHub repository.

  Rationale: by publishing or sharing your work you are facilitating other students to use your work, which is not permitted. If they submit your work, you may become involved in an academic integrity investigation.

- **Sharing, publishing, distributing your assignment work after the completion of COMP1511** is **not permitted**.

  For example, do not place your assignment in a public GitHub repository after COMP1511 is over.

  Rationale:COMP1511 sometimes reuses assignment themes, using similar concepts and content. If students in future terms can find your code and use it, which is not permitted, you may become involved in an academic integrity investigation.

Violation of the above conditions may result in an academic integrity investigation with possible penalties, up to and including a mark of 0 in COMP1511 and exclusion from UNSW.

Relevant scholarship authorities will be informed if students holding scholarships are involved in an incident of plagiarism or other misconduct. If you knowingly provide or show your assignment work to another person for any reason, and work derived from it is submitted - you may be penalised, even if the work was submitted without your knowledge or consent. This may apply even if your work is submitted by a third party unknown to you.

If you have not shared your assignment, you will not be penalised if your work is taken without your consent or knowledge.

For more information, read the UNSW Student Code , or contact the course account. The following penalties apply to your total mark for plagiarism:

0 for the assignment	Knowingly providing your work to anyone and it is subsequently submitted (by anyone).
0 for the assignment	Submitting any other person's work. This includes joint work.
0 FL for COMP1511	Paying another person to complete work. Submitting another person's work without their consent.

Submission of Work

You should submit intermediate versions of your assignment. Every time you autotest or submit, a copy will be saved as a backup. You can find those backups here, by logging in, and choosing the yellow button next to `ass2_cs_dungeon`.

Every time you work on the assignment and make some progress, you should copy your work to your CSE account and submit it using the `give` command below.

It is fine if intermediate versions do not compile or otherwise fail submission tests.

Only the final submitted version of your assignment will be marked.

You submit your work like this:

```
$ give cs1511 ass2_cs_dungeon cs_dungeon.c
```

Assessment Scheme

This assignment will contribute 25% to your final mark.

80% of the marks for this assignment will be based on the performance of the code you write in `cs_dungeon.c`.

20% of the marks for this assignment will come from manual marking of the readability of the C you have written. The manual marking will involve checking your code for clarity, and readability, which includes the use of functions and efficient use of loops and if statements.

Marks for your performance will be allocated roughly according to the below scheme.

COMP1911

100% for Performance	Completely working implementation of Stage 1 and Stage 2.
55% for Performance	Completely working implementation of Stage 1.

COMP1511

100% for Performance	Completely Working Implementation, which exactly follows the specification (Stage 1, 2, 3 and 4).
85% for Performance	Completely working implementation of Stage 1, 2 and 3.
65% for Performance	Completely working implementation of Stage 1 and Stage 2.
35% for Performance	Completely working implementation of Stage 1.

Marks for your style will be allocated roughly according to the scheme below.

Style Marking Rubric

	0	1	2	3	4
Formatting (/5)					

Indentation (/2) - Should use a consistent indentation scheme.	Multiple instances throughout code of inconsistent/bad indentation	Code is mostly correctly indented	Code is consistently indented throughout the program	
Whitespace (/1) - Should use consistent whitespace (for example, 3 + 3 not 3+ 3)	Many whitespace errors	No whitespace errors		
Vertical Whitespace (/1) - Should use consistent whitespace (for example, vertical whitespace between sections of code)	Code has no consideration for use of vertical whitespace	Code consistently uses reasonable vertical whitespace		
Line Length (/1) - Lines should be max. 80 characters long	Many lines over 80 characters	No lines over 80 characters		
Documentation (/5)				
Comments (incl. header comment) (/3) - Comments have been used throughout the code above code sections and functions to explain their purpose. A header comment (with name, zID and a program description) has been included	No comments provided throughout code	Few comments provided throughout code	Comments are provided as needed, but some details or explanations may be missing causing the code to be difficult to follow	Comments have been used throughout the code above code sections and functions to explain their purpose. A header comment (with name, zID and a program description) has been included
Function/variable/constant naming (/2) - Functions/variables/constants names all follow naming conventions in style guide and help in understanding the code	Functions/variables/constants names do not follow naming conventions in style guide and help in understanding the code	Functions/variables/constants names somewhat follow naming conventions in style guide and help in understanding the code	Functions/variables/constants names all follow naming conventions in style guide and help in understanding the code	
Organisation (/5)				
Function Usage (/4) - Code has been decomposed into appropriate functions separating functionalities	No functions are present, code is one main function	Some code has been moved to functions	Some code has been moved to sensible/thought out functions, and/or many functions exceed 50 lines (incl. main function)	Most code has been moved to sensible/thought out functions, and/or some functions exceed 50 lines (incl. main function)
Function Prototypes (/1) - Function Prototypes have been used to declare functions above main	Functions are used but have not been prototyped	All functions have a prototype above the main function or no functions are used		
Elegance (/5)				
Overdeep nesting (/2) - You should not have too many levels of nesting in your code (nesting which is 5 or more levels deep)	Many instances of overdeep nesting	<= 3 instances of overdeep nesting	No instances of overdeep nesting	

Code Repetition (/2) - Potential repetition of code has been dealt with via the use of functions or loops	Many instances of repeated code sections	<= 3 instances of repeated code sections	Potential repetition of code has been dealt with via the use of functions or loops	
Constant Usage (/1) - Any magic numbers are #defined	None of the constants used throughout program are #defined	All constants used are #defined and are used consistently in the code		
Illegal elements				
Illegal elements - Presence of any illegal elements indicated in the style guide	**CAP MARK AT 16/20**			

Note that the following penalties apply to your total mark for plagiarism:

0 for the assignment	Knowingly providing your work to anyone and it is subsequently submitted (by anyone).
0 for the assignment	Submitting any other person's work. This includes joint work.
0 FL for COMP1511	Paying another person to complete work. Submitting another person's work without their consent.

Allowed C Features

In this assignment, there are no restrictions on C Features, except for those in the style guide. If you choose to disregard this advice, you **must** still follow the style guide.

You also may be unable to get help from course staff if you use features not taught in COMP1511. Features that the Style Guide identifies as illegal will result in a penalty during marking. You can find the style marking rubric above. Please note that this assignment must be completed using only **Linked Lists** . Do not use arrays in this assignment. If you use arrays instead of lined lists you will receive a 0 for performance in this assignment.

Due Date

This assignment is due **15 November 2024 17:00:00**. For each day after that time, the maximum mark it can achieve will be reduced **by 5%** (off the ceiling).

- For instance, at **1 day past the due date**, the maximum mark you can get is **95%**.
- For instance, at **3 days past the due date**, the maximum mark you can get is **85%**.
- For instance, at **5 days past the due date**, the maximum mark you can get is **75%**.

No submissions will be accepted after 5 days late, unless you have special provisions in place.

Change Log

Version 1.0 (2024-10-24 13:00)	• Assignment Released
Version 1.1 (2024-10-24 19:00)	• Fixed fighter damage in stage 1 testing file expected output to match the specification.
Version 1.2 (2024-10-26 16:00)	• Added clarification to 2.4 regarding when powers can be used and fixed numbering on monster type error message
Version 1.3 (2024-10-27 13:40)	• Fixed reference solution for 4.2 not adding points after defeating the final boss and infinite-health bug in bosses.
Version 1.4 (2024-10-20 15:45)	• Fixed typo in example 2.1.2.
Version 1.5 (2024-11-2 12:11)	• Fixed typos in example 2.4.2.
Version 1.6 (2024-11-2 23:02)	• Fixed typos in examples 2.1.2 and 2.1.3
Version 1.7 (2024-11-2 23:10)	• Fixed typo in example 2.1.4

Version 1.8
(2024-11-4 19:22)

- Fixed typo in example 1.5.1

Version 1.9
(2024-11-7 14:00)

- Fixed reference for 4.2, printing of enums in error messages and removed unused constants from the starter code.

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