ReadMe - My Game Introduction

Hello welcome to my game, you are the selected hero from your village to defend your village from monsters.

Table of Contents

Intro

You are the selected hero from your village to defend your village from monsters around it. You always dreamed to be the hero of the village since young. Now it's time for you to shine. Prepare for all kinds of adventures, monsters, traps, you will encounter. All that you know is that this is hard, but you know that `with great power comes great responsibility`. So you must go on and defend your village. Be the hero. Wish you good luck!

(*Note: you must go before the dark as nearby monsters attack your village at night.*)

Prerequisites

You are given `at most a 5*5 map` since your village don't have a lot of paper to make you a map.

For Example:

```
== MAP ==
mc...
m...c
.mv.d
.mmm.
....d
You are the center of the map
== MAP ==
```

1. Your default stats (Player)

- Blood: 10
- Strength: 2
- Hunger: 20
- Coins: 10
- Level: 1

2. Your village's default stats

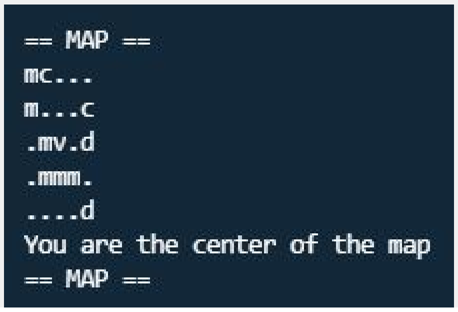
- Blood: 50
- Strength: 0
- Level: 1

If your strength / hunger / coins = 0

If you don't have enough hunger or strength the next time you lose either of them you will lose blood. But if you don't have enough coins (coins = 0), your coins will just be 0 if you lose them next time.

How to play / Rules

You start from day 1 of defending the village.
When you `move 1 spot`, it takes a hour and your `hunger will be deducted 1`. So, in **`a day`**, you can only take `24 steps` (unless you have potion of swiftness) before it gets dark.
When it's `night` time, your `village` will be `attacked by nearby monsters` (if you can see them from the map in the village's perpective means is nearby)

> For Example:
>
> 
>
> ```
> == MAP ==
> mc...
> m...c
> .mv.d
> .mmm.
> ....d
> You are the center of the map
> == MAP ==
> ```

> > village's perspective means the village is in the middle of the map

each nearby `monster` will have `10 damage times days you survived` to the village. Once the *`night is over`* and you and your village are both ***`still alive`*** everything will *reallocate* to their new places *except you and your village*. This will *`start a whole new day`* of defending your village with new and more unexpected things to come. Your `default blood` will be `added to 20`. Your `village` will become stronger with `50 more blood`.
`But` if the `village falls down` or 'you died' during the day, you fail your mission, and the ***`game is over`***.

For example (after the night stats):

1. Your day 2 stats (best condition) (Player)

- Blood: 20
- Strength: 2
- Hunger: 20
- Coins: 10
- Level: 2

2. Your village's day 2 (best condition) stats

- Blood: 100
- Strength: 0
- Level: 2

Summary of the game

You and your village can't fall down.

Basic Interfaces

Basic

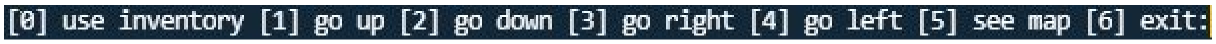
There are two main kinds of spot in the game. One is '.' and others.

Spots in map	Status
'.'(dot) / 'p'	normal
'm' / 's' / 'f' / 'c' / 'h'...(even hidden ones)	special

Whenever you see a map, `you are in the dead center of the map`. If you don't see 'p' doesn't mean you are not on the map, it's just that you are standing on a special spot.

Movement Interface

Ask which direction to go or you want to use inventory or see map or quit game.



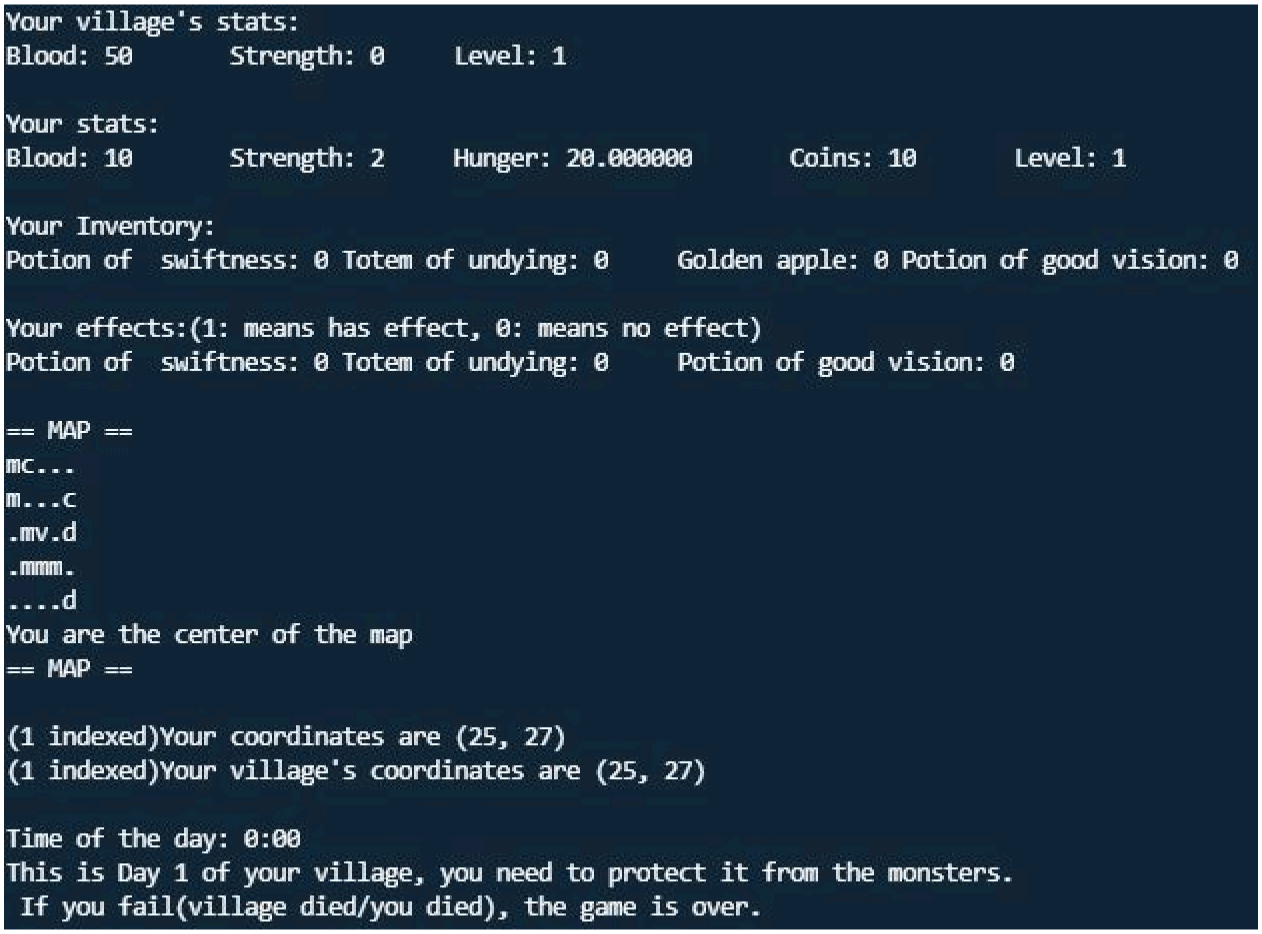
```
[0] use inventory [1] go up [2] go down [3] go right [4] go left [5] see map [6] exit:
```

After movement Interface

Each time after you move you will be given all kinds of information.

1. Village's stats

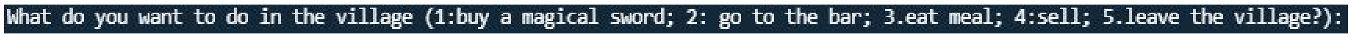
2. Your stats
3. What is in your inventory
4. Effects on you
5. Map
6. Coordinate (Yours and Village's)
7. Time of the day
8. Small reminder



```
Your village's stats:
Blood: 50       Strength: 0     Level: 1

Your stats:
Blood: 10       Strength: 2     Hunger: 20.000000       Coins: 10       Level: 1

Your Inventory:
Potion of  swiftness: 0 Totem of undying: 0     Golden apple: 0 Potion of good vision: 0

Your effects:(1: means has effect, 0: means no effect)
Potion of  swiftness: 0 Totem of undying: 0     Potion of good vision: 0

== MAP ==
mc...
m...c
.mv.d
.mmm.
....d
You are the center of the map
== MAP ==

(1 indexed)Your coordinates are (25, 27)
(1 indexed)Your village's coordinates are (25, 27)

Time of the day: 0:00
This is Day 1 of your village, you need to protect it from the monsters.
 If you fail(village died/you died), the game is over.
```

Village Interface

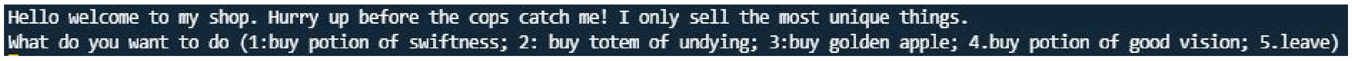
Ask what you want to do in the village



```
What do you want to do in the village (1:buy a magical sword; 2: go to the bar; 3.eat meal; 4:sell; 5.leave the village?):
```

Dealer's Shop Interface

Ask what you want to do in the dealer's_shop



```
Hello welcome to my shop. Hurry up before the cops catch me! I only sell the most unique things.
What do you want to do (1:buy potion of swiftness; 2: buy totem of undying; 3:buy golden apple; 4.buy potion of good vision; 5.leave)
```

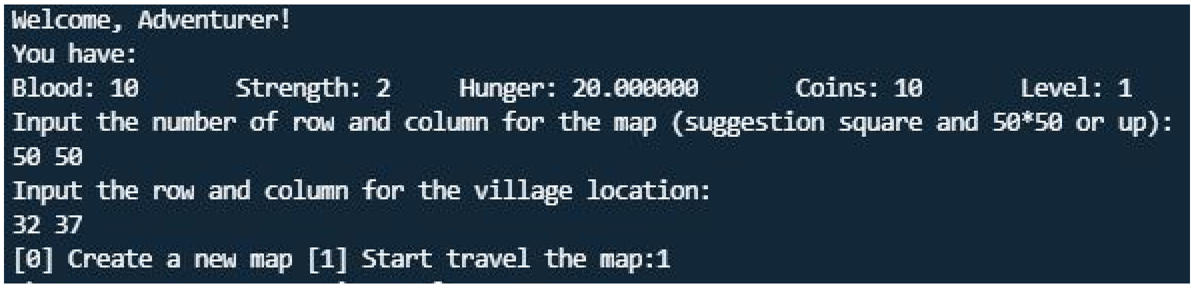
Inventory Interface

see inventory_interface

Setup

Intro

The game will first welcome adventurer and give you your stats. And then it will ask you to input the rows and columns of the map (suggestion: square and 50*50 or up) and then it will ask you to input the coordinates of the village. Then, you can choose to create a new map or start playing. You always `start from the village`.



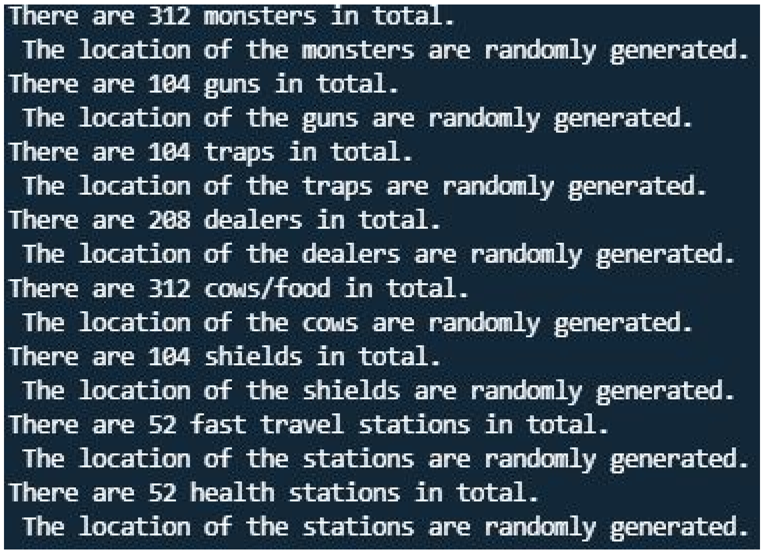
```
Welcome, Adventurer!
You have:
Blood: 10       Strength: 2     Hunger: 20.000000       Coins: 10       Level: 1
Input the number of row and column for the map (suggestion square and 50*50 or up):
50 50
Input the row and column for the village location:
32 37
[0] Create a new map [1] Start travel the map:1
```

Item setup

Items	How Many
Player	one
Village	one
Dealer	map size * 1/12
Monster	map size * 1/8
Food	map size * 1/8

Items	How Many
Guns	map size * 1/24
Shield	map size * 1/24
Traps	map size * 1/24
Fast Travel Stations	map size * 1/48
Health Stations	map size * 1/48

For example: a 50*50 map



```
There are 312 monsters in total.
 The location of the monsters are randomly generated.
There are 104 guns in total.
 The location of the guns are randomly generated.
There are 104 traps in total.
 The location of the traps are randomly generated.
There are 208 dealers in total.
 The location of the dealers are randomly generated.
There are 312 cows/food in total.
 The location of the cows are randomly generated.
There are 104 shields in total.
 The location of the shields are randomly generated.
There are 52 fast travel stations in total.
 The location of the stations are randomly generated.
There are 52 health stations in total.
 The location of the stations are randomly generated.
```

- The location of the items are randomly generated except for the village.

Items in the game

Player

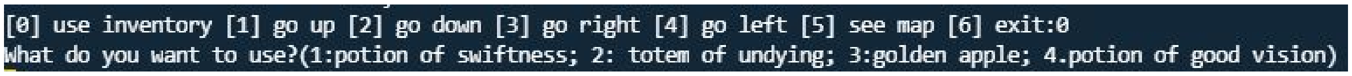
Is you

Is `'p'` on the map

see stats

Inventory (How to use)

Before you move, you can always use your inventory. You just need to type '0' and you can use it.



```
[0] use inventory [1] go up [2] go down [3] go right [4] go left [5] see map [6] exit:0
What do you want to use?(1:potion of swiftness; 2: totem of undying; 3:golden apple; 4.potion of good vision)
```

Your Village

Is `'v'` on the map

see stats

What can you do inside the village

1. Buy a magical sword
   Each sword is *3 coins* and will give you *1 strength*. You can only *buy once per visit*.
2. Go to the bar
   You can drink beer in the bar which will give you *+1 blood*. Each beer is worth *2 coins* and you can drink till you are back to health.
3. Eat a meal
   Each meal is worth *5 coins* and will give you *+5 hunger*. You can eat till you're full.
4. Sell things
   You can sell things from your inventory but each thing is only `sold for 5 coins`.

Dealer Shop

Is `'d'` on the map

The dealer shop is like a black market. It can highly improve your game. It sells unique things that you can't normally buy in your village. But because of this you can only buy stuff from this dealer shop once. Once you leave the shop you can only visit other shops in other locations, the shop you visited will `disappear` to avoid being arrested by the cops (there are actually no cops in this game, it is just to tell you that it is like a black market, and it will not be in the same location after you leave).

Things in the Dealer Shop

Potion of Swiftness

Makes you go faster, you can walk two steps at a time with only `-1 hunger`. *Effect lasts till the day ends*. Costs `25 coins`.

Totem of Undying

You won't die if you have this. It will give you `+5 blood` when in need.
Costs `50 coins`.

Golden Apple

When you eat it, it will give you `+5 blood and +5 hunger`.
Costs `55 coins`.

Potion of Good Vision

You can see `11 * 11 map` everytime you see the map. *Effect lasts till the end of the day*.
Costs `30 coins`.

How to use the items

You have to go in your inventory (see how to use inventory) and use it then the item will be in effect.
For example, you want to use the totem of undying, go in your inventory and use it then it will be in effect otherwise no.

- You can buy a lot of them but only use 1 of them (only 1 can be in effect)

Monster

Is `'m'` on the map

There are four levels of monsters. When you `encounter` a monster, the `levels` of the monsters are `randomly generated`. You then can *choose to fight or not to fight*. If you choose to `fight` your `hunger` will first be `deducted by the monster's strength`, as you will need tired and hungry after the fight.

Monsters	Stats (Day 1) (Default)
Lv. 1	Blood: 1 Strength: 1 Coins: 5
Lv. 2	Blood: 2 Strength: 2 Coins: 10
Lv. 3	Blood: 3 Strength: 3 Coins: 15
Lv. 4	Blood: 4 Strength: 4 Coins: 20

- Monster's Stats = Default Stats * (Days you survived) . For example, on day 2, a lv.2 monster will have 4 blood, 4 strength, and 20 coins.
- When you encounter a monster, each `monster's evasion rate` will be `randomly generated`, and when a monster `successfully` evaded your attack, it will `attack back` (will lose blood). If it `didn't evade`, it means you attacked successfully if your `attack is greater than their blood`. You will `get` the `coins` and your `strength` will be `added 1`, but if your attack is `lesser` than their blood, it means you `lost`, and `you` will be `attacked` (will lose blood). The monster won't go anywhere if you lose, so you can always come back again(may be different level). But the monster will disappear if you win, because you just killed it.

Food

Is `'c'` on the map, as it stands for chicken or cow

When you encounter a "food", you can eat it, and your hunger will be `added 2`. If you are already full, then the game will say you are full and you don't need to eat it (to save animals). But the animal will go nowhere so you can come back anytime. But if you are almost full (if +2 hunger will be greater than 20 hunger) then you will only be added to 20 hunger.

Guns / Shields / Traps

They are all over the map, but hided from you(can't see from map) . Each '.' may be a gun, shield, or a trap, so walk with caution.
After you stepped on it, it will disappear (not in the same location).

Hidden Items	Description
Guns	Will give you strength. (strength +1)
Shield	Will give you protection (blood+1).
Trap 1	Will lose 1 blood and 1 strength
Trap 2	Will lose coins

- The amount of coins you lose is somewhere between 0 to half your amount (random). So don't be worried.
- If you don't have any strength (strength = 0) then the next time you lose strength you will lose blood. see if your strength/hunger/coins = 0 for more info

Fast Travel Stations

Is `'f'` on the map
They can help you `travel back to the village` right away if you want.

Health Stations

Is `'h'` on the map
It will give you `+1 blood`. But if you are already healthy, you don't need it.

Functions and Variables

Variables

Monster stats

```c
typedef struct
{
    int blood;
    int strength;
    int coins;
    int level;
    int evasionRate;
} info;
//for monster
```

Player Stats

```c
typedef struct
{
    int default_blood;
    int blood;
    int strength;
    double hunger;
    int coins;
    int level;
    int rp;           // player row coordinate
    int cp;           // player column coordinate
    int rv;           // village row coordinate
    int cv;           // village column coordinate
    int boot;         // for calculating time of the day
    int day;          // what day it is
    inventory things; // like backpack
    inventory effect; // what effects are on me
} adventurer;
// for hero
```

Inventory

```
typedef struct
{
    int potion_of_swiftness;
    int totem_of_undying;
    int golden_apple;
    int potion_of_good_vision;
} inventory;
//inventory
```

Village Stats

```
typedef struct
{
    int blood;
    int strength;
    int level;
} village;
// for village
```

Create Map

```
char **create_map(int *row, int *col)
{
    //ask for row and col
    printf("Input the number of row and column for the map (suggestion square and 50*50 or up):\n"
    scanf("%d %d", row, col);

    //malloc
    char **arr = (char **)malloc(*row * sizeof(char *));
    for (int i = 0; i < *row; i++)
        arr[i] = (char *)malloc(*col * sizeof(char));

    //set all to '.'
    for (int i = 0; i < *row; i++)
        for (int j = 0; j < *col; j++)
            arr[i][j] = '.';
    return arr;
}
```

Decide to travel or not

```
int travel_decide()
{
    int decide; // decide to create a new map or travel
    printf("[0] Create a new map [1] Start travel the map:");
    scanf("%d", &decide);
    return decide;
}
```

Check for availability and boundaries

1. Human input check
    - Check boundary

    ```
    int check_boundary(int *row, int *col, int r, int c) // row temp and col te
    {
        if (r >= *row || r < 0 || c >= *col || c < 0)
        {
            printf("the location is  outside the map\n");
            return 1; // true
        }
        else
            return 0; // false
    }
    ```

    - Check availability

    ```
    int check_availability(char **map, int *row, int *col, int r, int c)
    {
        if (map[r][c] !='.') // check if occupied
        {
            printf("the location is occupied\n");
            return 1; // true
        }
        else
            return 0; // false
    }
    ```

2. Computer input

only need to check availability cause computer won't input a row or column out of range (I coded it)

- Check availability

  ```c
  int comp_check_availability(char **map, int *row, int *col, int r, int c)
  {
      if (map[r][c] != '.') // check if occupied
          return 1;         // true
      else
          return 0; // false
  }
  ```

Human typed setup

1. setup village coordinates

   ```c
   void setup_village(char **map, int *row, int *col, adventurer *hero) // input village c
    {
        printf("Input the row and column for the village location:\n");
        scanf("%d %d", &hero->rv, &hero->cv);
        if (check_boundary(row, col, hero->rv, hero->cv))//check if out of range
            setup_village(map, row, col, hero);//if yes then call the function again
        map[hero->rv][hero->cv] = 'v';//otherwise set coordinate to 'v'
    }
   ```

2. setup player coordinates

~~~
```c
hero.rp = hero.rv; // player row = village row
hero.cp = hero.cv; // player column = village column
```
~~~

Computer setup

1. setup dealer

```
void setup_dealer(char **map, int *row, int *col)
{
    int dealers_num = (*row) * (*col) * 1 / 12; // setup how many
    printf("There are %d dealers in total.\n The location of the dealers are randomly g
    for (int i = 0; i < dealers_num;)
    {
        int rowd, cold;                                        // dealer row and deale
        rowd = rand() % (*row);                                // random generate row
        cold = rand() % (*col);                                // random generate colu
        if (comp_check_availability(map, row, col, rowd, cold)) // check if available,
            continue;
        i++;                    // put here so if continue 'i' will not plus 1
        map[rowd][cold] = 'd'; // set coordinates to dealer
    }
}
```

2. setup monster

```
void setup_monster(char **map, int *row, int *col) // input monster coordinates
{
    int monster_num = (*row) * (*col) * 1 / 8; // how many monsters
    printf("There are %d monsters in total.\n The location of the monsters are randomly
    for (int i = 0; i < monster_num;) // check input and coordinates for monster(s)
    {
        int rowm, colm;                                        // monster row and mons
        rowm = rand() % (*row);                                // random generate row
        colm = rand() % (*col);                                // random generate colu
        if (comp_check_availability(map, row, col, rowm, colm)) // check if available,
            continue;
        i++;                    // put here so if continue 'i' will not plus 1
        map[rowm][colm] = 'm'; // set coordinates to monster
    }
}
```

3. setup food

```
void setup_food(char **map, int *row, int *col) // input cow coordinates
{
    int food_num = (*row) * (*col) * 1 / 8; // how many chicken/cow
    printf("There are %d cows/food in total.\n The location of the cows are randomly ge
    for (int i = 0; i < food_num;)
    {
        int rowf, colf;                                             // food row and food co
        rowf = rand() % (*row);                                     // random generate row
        colf = rand() % (*col);                                     // random generate colu
        if (comp_check_availability(map, row, col, rowf, colf)) // check if available,
            continue;
        i++;                       // put here so if continue 'i' will not plus 1
        map[rowf][colf] = 'c'; // set coordinates to food
    }
}
```

4. setup gun

```
void setup_gun(char **map, int *row, int *col)
{
    int gun_num = (*row) * (*col) / 24; // how many guns
    printf("There are %d guns in total.\n The location of the guns are randomly generat
    for (int i = 0; i < gun_num;)
    {
        int rowg, colg;                                             // gun row and gun col
        rowg = rand() % (*row);                                     // random genrate row;
        colg = rand() % (*col);                                     // random genrate col
        if (comp_check_availability(map, row, col, rowg, colg)) // check if available,
            continue;
        i++;                       // put here so if continue 'i' will not plus 1
        map[rowg][colg] = 'g'; // set coordinates to guns for computer but map will not
    }
}
```

5. setup shield

```
void setup_shield(char **map, int *row, int *col)
{
    int shield_num = (*row) * (*col) / 24; // how many shields
    printf("There are %d shields in total.\n The location of the shields are randomly g
    for (int i = 0; i < shield_num;)
    {
        int rows, cols;                                 // shield row and shiel
        rows = rand() % (*row);                         // random genrate row;
        cols = rand() % (*col);                         // random genrate col
        if (comp_check_availability(map, row, col, rows, cols)) // check if available,
            continue;
        i++;                    // put here so if continue 'i' will not plus 1
        map[rows][cols] = 's'; // set coordinates to shields for computer but map will
    }
}
```

6. setup traps

```
void setup_trap(char **map, int *row, int *col)
{
    int trap_num = (*row) * (*col) / 24; // how many traps
    printf("There are %d traps in total.\n The location of the traps are randomly gener
    for (int i = 0; i < trap_num;)
    {
        int rowt, colt;                                 // trap row and trap co
        rowt = rand() % (*row);                         // random genrate row;
        colt = rand() % (*col);                         // random genrate col
        if (comp_check_availability(map, row, col, rowt, colt)) // check if available,
            continue;
        i++;                    // put here so if continue 'i' will not plus 1
        map[rowt][colt] = 't'; // set coordinates to traps for computer but map will no
    }
}
```

7. setup fast travel stations

```c
void setup_fast_travel(char **map, int *row, int *col)
{
    int fast_travel_num = (*row) * (*col) * 1 / 48; // how many fast travel stations
    printf("There are %d fast travel stations in total.\n The location of the stations
    for (int i = 0; i < fast_travel_num;)
    {
        int rowf, colf;                                            // fast travel row and
        rowf = rand() % (*row);                                    // random genrate row;
        colf = rand() % (*col);                                    // random genrate col
        if (comp_check_availability(map, row, col, rowf, colf)) // check if available,
            continue;
        i++;                    // put here so if continue 'i' will not plus 1
        map[rowf][colf] = 'f'; // set coordinates to fast travel stations
    }
}
```

8. setup health stations

~~~
```c
void setup_clinic(char **map, int *row, int *col)
{
    int clinic_num = (*row) * (*col) * 1 / 48; // how many health stations
    printf("There are %d health stations in total.\n The location of the stations are randomly gen
    for (int i = 0; i < clinic_num;)
    {
        int rowh, colh;                                            // health row and health col
        rowh = rand() % (*row);                                    // random genrate row;
        colh = rand() % (*col);                                    // random genrate col
        if (comp_check_availability(map, row, col, rowh, colh)) // check if available, if not rand
            continue;
        i++;                    // put here so if continue 'i' will not plus 1
        map[rowh][colh] = 'h'; // set coordinates to health stations
    }
}
```
~~~

Encounters

1. Encounter village
    - buy sword

      see what can you do inside the village for more info

```c
if (count_sword >= 1) // already bought once during this visit
{
    printf("You already brought a sword.\n");
    break;
}
else
{
    printf("The magical sword is %d coins\n", sword.coins); // show how muc
    printf("Do you want to buy it? [0]No [1]Yes:\n");
    int decide; // decide to buy or not
    scanf("%d", &decide);
    if (!decide) // decide no
        break;
    if (!check_coins(hero, sword.coins)) // otherwise if yes then check if 
        break;
    hero->coins -= sword.coins;
    (hero->strength)++;
    printf("Nice sword! Now you have %d strength and %d coins!\n", hero->st
    count_sword++;
    break;
}
```

- go to the bar
  see what can you do inside the village for more info

```c
if ((hero->blood) >= hero->default_blood) // check if blood is full
{
    printf("Your blood is full. You don't need a beer.\n");
    break;
}
else
{
    printf("The magical beer is %d coins\n", beer.coins); // show how much 
    printf("Do you want to buy it? [0]No [1]Yes:\n");
    int decide; // decide to buy or not
    scanf("%d", &decide);
    if (!decide) // decide no
        break;
    if (!check_coins(hero, beer.coins)) // check if enough money to buy
        break;
    hero->coins -= beer.coins;
    (hero->blood)++;
    printf("Nice beer! Now you have %d blood and %d coins!\n", hero->blood,
    break;
}
```

- eat meal

  see what can you do inside the village for more info

  ```
  if ((hero->hunger) >= 20) // check if full
  {
      printf("You are full. You don't need a meal.\n");
      break;
  }
  else
  {
      int meal_coins = 5;                                 // one meal cost
      printf("The magical feast is %d coins\n", meal_coins); // show how much
      printf("Do you want to buy it? [0]No [1]Yes:\n");
      int decide; // decide to buy or not
      scanf("%d", &decide);
      if (!decide) // decide no
          break;
      if (!check_coins(hero, meal_coins)) // check if enough coins to buy
          break;
      hero->coins -= meal_coins;
      (hero->hunger) += 5;   // hunger +5
      if (hero->hunger > 20) // add to full
          hero->hunger = 20;
      printf("Nice meal! Now you have %d hunger and %d coins!\n", hero->hunge
      break;
  }
  ```

- sell

  see what can you do inside the village for more info

```
while (1)
{
    printf("What do you want to sell?(1:sell potion of swiftness; 2: sell to
    int decide;
    scanf("%d", &decide);
    switch (decide)
    {
    case 1:                                      // sell potion of swiftne
        if (hero->things.potion_of_swiftness == 0) // check if you have it
        {
            printf("You don't have it, stop scamming your village.\n");
            break;
        }
        hero->things.potion_of_swiftness--;           // sold
        hero->coins += 10;                            // add 10 coins
        printf("Now you have %d coins", hero->coins); // show how many coins
        break;
    case 2:                                    // sell totem of undying
        if (hero->things.totem_of_undying == 0) // check if you have it
        {
            printf("You don't have it, stop scamming your village.\n");
            break;
        }
        hero->things.totem_of_undying--;              // sold
        hero->coins += 10;                            // add 10 coins
        printf("Now you have %d coins", hero->coins); // show how many coins
        break;
    case 3:                                 // sell golden apple
        if (hero->things.golden_apple == 0) // check if you have it
        {
            printf("You don't have it, stop scamming your village.\n");
            break;
        }
        hero->things.golden_apple--;                  // sold
        hero->coins += 10;                            // add 10 coins
        printf("Now you have %d coins", hero->coins); // show how many coins
        break;
    case 4:                                          // sell potion of good
        if (hero->things.potion_of_good_vision == 0) // check if you have it
        {
            printf("You don't have it, stop scamming your village.\n");
            break;
        }
        hero->things.potion_of_good_vision--;         // sold
        hero->coins += 10;                            // add 10 coins
        printf("Now you have %d coins", hero->coins); // show how many coins
        break;
    case 5:
        printf("Thanks for selling\n"); // say bye bye
        break;
    default: // invalid action
        printf("Invalid action!\n");
        break;
}
```

- leave

```
case 5: // leave
    printf("You are welcome to come back anytime!\n");
    return;
default: // invalid action
    printf("Invalid action! 1:buy a magical sword; 2: go to the bar; 3.eat meal; 4:sale
    break;
```

2. Encounter dealer

```c
void encounter_dealer(adventurer *hero)
{
    // count the times you buy something
    int count_one = 0;
    int count_two = 0;
    int count_three = 0;
    int count_four = 0;
    printf("Hello welcome to my shop. Hurry up before the cops catch me! I only sell th
    while (1)
    {
        printf("What do you want to do (1:buy potion of swiftness; 2: buy totem of undy

        // how much
        int potion_of_swiftness = 25;
        int totem_of_undying = 55;
        int golden_apple = 50;
        int potion_of_good_vision = 30;

        // decide
        int dowhat;
        scanf("%d", &dowhat);
        switch (dowhat)
        {
            case 1:                 // buy potion of swiftness
                if (count_one >= 1) // check if you already bought once during the visi
                {
                    printf("You already brought it.\n");
                    break;
                }
                else
                {
                    printf("The potion of swiftness is %d coins\n(last for 1 day)", pot
                    printf("Do you want to buy it? [0]No [1]Yes:\n");
                    int decide; // decide to buy or not
                    scanf("%d", &decide);
                    if (!decide) // decide no
                        break;
                    if (!check_coins(hero, potion_of_swiftness)) // check if you have e
                        break;
                    hero->coins -= potion_of_swiftness; // sold
                    hero->things.potion_of_swiftness++;
                    printf("Nice! Now you can 2 times speed, but only cost 1 hunger.\n"
                    count_one++;
                    break;
                }
            case 2:
                if (count_two >= 1) // check if you already bought once during the visi
                {
                    printf("You already brought it.\n");
                    break;
                }
                else
                {
                    printf("The totem of undying is %d coins(Note: can only use one tim
                    printf("Do you want to buy it? [0]No [1]Yes:\n");
                    int decide; // decide to buy or not
                    scanf("%d", &decide);
                    if (!decide) // decide no
                        break;
                    if (!check_coins(hero, totem_of_undying)) // check if you have enou
                        break;
                    hero->coins -= totem_of_undying; // sold
                    hero->things.totem_of_undying++;
                    printf("Nice! Now if you are strike to death, you will have 5 more
                    count_two++;
                    break;
                }
            case 3:
                if (count_three >= 1) // check if you already bought once during the vi
                {
                    printf("You already brought it.\n");
                    break;
                }
                else
                {
                    printf("The golden apple is %d coins(Note: can only use one time)\r
                    printf("Do you want to buy it? [0]No [1]Yes:\n");
                    int decide; // decide to buy or not
                    scanf("%d", &decide);
                    if (!decide) // decide no
                        break;
                    if (!check_coins(hero, golden_apple)) // check if you have enough m
                        break;
                    hero->coins -= golden_apple; // sold
                    hero->things.golden_apple++;
                    printf("Nice! It will give you five more blood when you eat.\n"); /
                    count_three++;                                                      /
                    break;
                }
            case 4:
                if (count_four >= 1) // check if you already bought once during the vis
                {
                    printf("You already brought it.\n");
                    break;
                }
                else
                {
                    printf("The potion of good vision is %d coins(Note: last for two da
                    printf("Do you want to buy it? [0]No [1]Yes:\n");
                    int decide; // decide to buy or not
                    scanf("%d", &decide);
                    if (!decide) // decide no
                        break;
                    if (!check_coins(hero, potion_of_good_vision)) // check if you have
                        break;
                    hero->coins -= potion_of_good_vision; // sold
                    hero->things.potion_of_good_vision++;
                    printf("Nice! Now you can see more when you see the map\n"); // des
                    count_four++;                                                // cou
                    break;
                }
            case 5: // say farewell
                printf("For now, bye bye! Hope we meet again soon and hide those things
                return;
            default: // Invalid action
                printf("Invalid action! 1:buy potion of swiftness; 2: buy totem of undy
                break;
        }
    }
}
```

3. Encounter monster

```c
char encounter_monster(adventurer *hero)
{
    info monster = {0, 0, 0, 0, 0};
    monster.level = (rand() % 4 + 1);
    monster.blood = monster.strength = (monster.level * hero->day);
    monster.coins = monster.blood * 5;
    printf("You are fighting Monster %d!\n", monster.strength);
    printf("Monster %d has %d blood, %d strength, %d coins\n", monster.level, monster.b
    printf("do you want to fight [0]No [1]Yes:\n");
    int decide; // decide to fight or not
    scanf("%d", &decide);
    if (decide) // decide yes
    {
        hero->hunger -= monster.level; // hunger - monsterlevel
        if (check_hunger(hero))        // see if hunger = 0,if yes then lose
            return 'l';
        if (check_blood(hero)) // see if blood = 0, if yes then dead
            return 'D';
        switch (battle_result(&monster, hero)) // battle
        {
        case 0: // you are dead (blood=0)
            return 'D';
        case 1:                          // you win
            hero->coins += monster.coins; // you get monster coins
            (hero->strength)++;           // your strength++
            return 'w';
        case 2: // you lose
            return 'l';
        }
    } // if decide not to fight, set to you lose
    return 'l';
}
```

- battle result function

```
int battle_result(info *monster, adventurer *hero)
{
    srand(time(NULL)); // set random's seed
    do
    {
        monster->evasionRate = rand() % 101;                              // random mor
        printf("monster's evasionRate is: %d%%\n", monster->evasionRate); // show monst
        if (hero->blood <= 0)                                             // if blood<=
        {
            printf("You DEAD!\n");
            return 0;
        }
    } while (monster->level > 0 && evasion(monster, hero)); // if monster keeps evading

    // monster evade unsuccessfull
    if (monster->strength <= hero->strength) // if your attack(strength) >= monster blo
    {
        printf("You Win!\n");
        return 1;
    }
    else // otherwise you lose and monster will attack
    {
        printf("You Lose!\n");
        hero->blood -= monster->strength; // monster attack
        return 2;
    }
}
```

- evasion function

```
int evasion(info *monster, adventurer *hero)
{
    int e = rand() % 101;           // randomize to compare with monster evasion rate
    if (e <= monster->evasionRate) // if e is smaller than the monster evades successfu
    {
        printf("monster has evaded\n");
        hero->blood = hero->blood - monster->level; // monster attack
        return 1;
    }
    return 0; // evasion unsuccessful
}
```

4. Encounter food

```c
char encounter_food(adventurer *hero)
{
    if (hero->hunger >= 20) // check if you are full already
    {
        printf("You are full. You don't need to eat.\n");
        return 'l';
    }
    (hero->hunger) += 2;
    if (hero->hunger > 20) // if add too full then hunger = 20
        hero->hunger = 20;
    printf("You have %lf hunger\n", hero->hunger); // show hunger
    return 'w';
}
```

5. Encounter gun

```c
void encounter_gun(adventurer *hero)
{
    printf("Congrats you have found a special gun! You may not find it again!!!\n");
    (hero->strength)++;                              // get +1 strength
    printf("You have %d strength\n", hero->strength); // show strength
    return;
}
```

6. Encounter shield

```c
void encounter_shield(adventurer *hero)
{
    if (hero->blood >= 10) // check if healthy
    {
        printf("You are healthy. You don't need a shield\n");
        return;
    }

    (hero->blood)++;                           // get blood +1
    printf("You have %d blood\n", hero->blood); // show blood
    return;
}
```

7. Encounter trap

```c
void encounter_trap(adventurer *hero)
{
    int type = rand() % 2; // randomize which kind of trap
    if (!type)             // trap 1 => lose blood and strength
    {
        printf("OH OH!\n You have stepped on the trap\n");
        // lose blood and strength
        (hero->blood)--;
        hero->strength--;
        if (hero->strength <= 0) // if no more strength, lose blood
        {
            printf("You have no strength.\n");
            hero->strength = 0;
            printf("You have %d strength\n", hero->strength);
            printf("You will lose blood.\n");
            (hero->blood)--;
        }
        if (hero->blood <= 0) // if no more blood, you dead
        {
            printf("You DEAD!\n");
            return;
        }
        printf("You have %d blood\n", hero->blood); // show blood
    }
    else // trap 2 => lose coins
    {
        printf("OH OH!\n Someone stole your money\n");
        int stole = rand() % ((hero->coins) / 2); // random amount of coins to steal
        if (!check_coins(hero, 1))                // check if you have coins to steal
            hero->coins = 0;
        printf("You have %d coins left\n", hero->coins); // show coins
    }

    return;
}
```

8. Encounter fast travel stations

```c
char encounter_station(adventurer *hero)
{
    printf("You are now in the fast travel station\n");                // description
    printf("Do you want to travel back to village? [0]No [1]Yes :\n"); // decide
    int decide;
    scanf("%d", &decide);
    if (decide) // decide yes
    {
        return 'f';
    }
    return 'l'; // decide no
}
```

9. Encounter health stations

~~~
```c
char encounter_clinic(adventurer *hero)
{
    printf("You are now in the health station\n"); // description
    if (hero->blood >= hero->default_blood)        // check if blood is full
        printf("You are already healthy you don't need it");
    else               // if no
        hero->blood++; // add +1 blood
    return 'l';
}
```
~~~

Check blood / strength / hunger / if survive new day

- Check player blood

```c
int check_blood(adventurer *hero)
{
    // check if your blood = 0 and have totem of undying or not
    if (hero->blood <= 0 && hero->effect.totem_of_undying == 0) // don't have totem of
    {
        printf("You DEAD"); // dead
        return 1;
    }
    else if (hero->blood <= 0 && hero->effect.totem_of_undying == 1) // if you have tot
    {
        hero->blood = 5;                                                            //
        printf("triggered totem of undying, now you have %d blood\n", hero->blood); //
        hero->effect.totem_of_undying--;                                            //
    }
    return 0;
}
```

- Check village blood

```c
if (village.blood <= 0) // check village blood
{
    printf("Your village has fallen\n"); // game over
    free(map);                           // free malloced map
    break;
}
printf("Congrats you and your village have lived another day.\n"); // village survive
day++;                                                             // live another day
```

- Check player strength

```c
if (hero->strength <= 0) // if no more strength, lose blood
    {
        printf("You have no strength.\n");
        hero->strength = 0;
        printf("You have %d strength\n", hero->strength); // show strength
        printf("You will lose blood.\n");
        (hero->blood)--;
    }
```

- Check player hunger

```c
int check_hunger(adventurer *hero)
{
    if (hero->hunger <= 0) // check if too hungry
    {
        hero->hunger = 0;
        printf("You are hungry! You will lose blood!\nPlease EAT!!!\n");
        hero->blood--; // lose blood
        return 1;
    }
    return 0;
}
```

- Check if survive new day

```c
int check_time(char **map, int *row, int *col, adventurer *hero, village *village)
{
    if (hero->boot == 0) // check if night time
    {
        free(map);
        printf("It's a new day, things are respawned except your village and you.\n");
        map = create_map(row, col);
        map[hero->rv][hero->cv] = 'v';
        map[hero->rp][hero->cp] = 'p';
        hero->effect.potion_of_good_vision = 0;
        hero->effect.potion_of_swiftness = 0;
        int monster_count = 0;
        for (int i = hero->rp - 2 - hero->effect.potion_of_good_vision * 3; i <= hero->
        {
            for (int j = hero->cp - 2 - hero->effect.potion_of_good_vision * 3; j <= he
            {
                if (i < 0 || i >= *row)
                    continue;
                if (j < 0 || j >= *col)
                    continue;
                if (map[i][j] == 'm')
                    monster_count++; // if nearby monster ++
            }
        }

        village->blood -= monster_count * 10; // nearby monster attack
        village->level++;                     // village level +1
        hero->level++;                        // player level+1
        hero->day++;                          // new day
        return 1;
    }
    return 0;
}
```

Player Movement

- Ask what do you want to do

```
int move(char **map, int *row, int *col, adventurer *hero, village *village)
{
    int decision; // decision to go up /down....
    printf("[0] use inventory [1] go up [2] go down [3] go right [4] go left [5] see ma
    scanf("%d", &decision);
    switch (decision)
    {
    case 0: // use inventory
        printf("What do you want to use?(1:potion of swiftness; 2: totem of undying; 3:
        int decide; // decide what to do
        scanf("%d", &decide);
        switch (decide)
        {
        case 1:                                         // use potion of swiftness
            if (hero->things.potion_of_swiftness == 0) // check if you have it
            {
                printf("You don't have it.\n");
                return 1;
            }
            hero->things.potion_of_swiftness--;
            hero->effect.potion_of_swiftness++;
            hero->boot *= 2;
            printf("Now you have %d potion(s) of swiftness", hero->things.potion_of_swi
            printf("Nice! Now you can 2 times speed, but only cost half the amount of h
            return 1;
        case 2:                                      // use totem of undying
            if (hero->things.totem_of_undying == 0) // check if you have it
            {
                printf("You don't have it.\n");
                return 1;
            }
            hero->things.totem_of_undying--;
            hero->effect.totem_of_undying++;
            printf("Now you have %d totem(s) of undying", hero->things.totem_of_undying
            printf("Nice! Now if you are strike to death, you will have 5 more blood.\r
            return 1;
        case 3:
            if (hero->things.golden_apple == 0) // check if you have it
            {
                printf("You don't have it.\n");
                return 1;
            }
            if (hero->blood > 5)
            {
                printf("you have %d blood now, do you still want to use it [0]No [1]Yes
                int decide;
```

```c
                scanf("%d", &decide);
                if (!decide)
                    return 1;
            }
            hero->things.golden_apple--;            // use golden apple
            hero->blood += 5;                       // get effect for golden apple
            if (hero->blood >= hero->default_blood) // add to healthy
                hero->blood = hero->default_blood;
            printf("Now you have %d golden apple(s)", hero->things.golden_apple); // sh
            printf("Nice! Now you have %d blood\n", hero->blood);                 // de
            return 1;
        case 4:                                          // use potion of good vision
            if (hero->things.potion_of_good_vision == 0) // check if you have it
            {
                printf("You don't have it.\n");
                return 1;
            }
            hero->things.potion_of_good_vision--;
            hero->effect.potion_of_good_vision++;
            printf("Now you have %d potion(s) of good vision", hero->things.potion_of_g
            printf("Nice! Now you can see more when you see the map\n");
            return 1;
        default:
            printf("Invalid action!\n");
            return 1;
        }
    case 1: // up
        go_up(map, row, col, hero, village);
        return 1;
    case 2: // down
        go_down(map, row, col, hero, village);
        return 1;
    case 3: // right
        go_right(map, row, col, hero, village);
        return 1;
    case 4: // left
        go_left(map, row, col, hero, village);
        return 1;
    case 5: // see map
        print_map(map, row, col, hero, village);
        return 1;
    case 6: // quit game
        return 0;
    }
}
```

- go up (similar coding to down / left / right)

```c
void go_up(char **map, int *row, int *col, adventurer *hero, village *village) // up
{
    if (check_boundary(row, col, hero->rp - 1, hero->cp)) // check if out of range
        return;
    hero->hunger -= (1 / (hero->effect.potion_of_swiftness + 1)); // see if there is po
    hero->boot--;                                                // time of day++
    int a = check_hunger(hero);                                  // see if hungry
    if (check_blood(hero))                                       // see if have blood
        return;
    char temp = map[hero->rp][hero->cp]; // temp for player standing spot
    if (temp == 'p')                     // if player standing spot is shown 'p', then
        temp = '.';
    switch (check_move(map, row, col, hero->rp - 1, hero->cp, hero)) // try next step f
    {
    case 'w': // means player's 'p' can be shown on map
    {
        map[--(hero->rp)][hero->cp] = 'p';
        map[hero->rp + 1][hero->cp] = temp;
        return;
    }
    case 'f': // travel back to village
        --(hero->rp);
        map[hero->rp + 1][hero->cp] = temp;
        hero->rp = hero->rv;
        hero->cp = hero->cv;
        printf("You are now back in the village\n");
        in_village(hero);
        return;
    case 'l': // means player's 'p' can't be shown on map because it is a special spot
        --(hero->rp);
        map[hero->rp + 1][hero->cp] = temp;
        return;
    case 'D': // your dead
        return;
    }

    map[--(hero->rp)][hero->cp] = 'p';       // move p to the next spot
    map[hero->rp + 1][hero->cp] = temp;      // original standing spot is recovered
    print_map(map, row, col, hero, village); // print out map
}
```

- Check if it's a special spot (special spot means every spot that is not '.')

```
char check_move(char **map, int *row, int *col, int rp, int cp, adventurer *hero) // ch
{
  if (map[rp][cp] != '.') // special spot
  {
      if (map[rp][cp] == 'v') // village
      {
          printf("you are now in the village\nWelcome!!!\n");
          in_village(hero); // go to village
          return 'l';
      }
      else if (map[rp][cp] == 'm') // monster
      {
          printf("you are fighting a monster\n");
          char res = encounter_monster(hero); // fight monster
          return res;
      }
      else if (map[rp][cp] == 'g') // gun
      {
          encounter_gun(hero); // get gun
          return 'w';
      }
      else if (map[rp][cp] == 't') // trap
      {
          encounter_trap(hero); // encounter trap
          return 'w';
      }
      else if (map[rp][cp] == 'd') // dealer's shop
      {
          encounter_dealer(hero); // go to dealer's shop
          return 'w';
      }
      else if (map[rp][cp] == 'c') // food
      {
          char res = encounter_food(hero); // get food
          return res;
      }
      else if (map[rp][cp] == 's') // shield
      {
          encounter_shield(hero); // get shield
          return 'w';
      }
      else if (map[rp][cp] == 'f') // fast travel station
      {
          return encounter_station(hero); // go to station
      }
      else if (map[rp][cp] == 'h') // health station
```

```
        {
            return encounter_clinic(hero); // go to station
        }
    }
    else
        return 'n'; // normal spot
}
```

Print out map / important stats

see after_movement_interface for more info

```c
void print_map(char **arr, int *row, int *col, adventurer *hero, village *village)
{
    // village stat
    printf("\n\nYour village's stats:\n");
    printf("Blood: %d\tStrength: %d\tLevel: %d\n\n", village->blood, village->strength, village->l

    // player stat
    printf("Your stats:\n");
    printf("Blood: %d\tStrength: %d\tHunger: %lf\tCoins: %d\tLevel: %d\n\n", hero->blood, hero->st

    // what's in your inventory
    printf("Your Inventory:\n");
    printf("Potion of  swiftness: %d\tTotem of undying: %d\tGolden apple: %d\tPotion of good visio

    // effects on you
    printf("Your effects:(1: means has effect, 0: means no effect)\n");
    printf("Potion of  swiftness: %d\tTotem of undying: %d\tPotion of good vision: %d\n\n", hero->

    // show map
    printf("== MAP ==\n");
    for (int i = hero->rp - 2 - hero->effect.potion_of_good_vision; i <= hero->rp + 2 + hero->effe
    {
        for (int j = hero->cp - 2 - hero->effect.potion_of_good_vision; j <= hero->cp + 2 + hero->
        {
            if (i < 0 || i >= *row)
                continue;
            if (j < 0 || j >= *col)
                continue;
            if (arr[i][j] != 'p' && arr[i][j] != 'v' && arr[i][j] != 'd' && arr[i][j] != 'c' && ar
                printf("%c", '.');
            else
                printf("%c", arr[i][j]);
        }
        printf("\n");
    }
    // reminder
    printf("You are the center of the map\n");
    printf("== MAP ==\n\n");

    // coordinates
    printf("(1 indexed)Your coordinates are (%d, %d)\n", hero->cp + 1, hero->rp + 1);
    printf("(1 indexed)Your village's coordinates are (%d, %d)\n\n", hero->cv + 1, hero->rv + 1);

    // time
    printf("Time of the day: %d:00\n", 24 - (hero->boot / (hero->effect.potion_of_swiftness + 1)))
}
```

Version

v. 1.0