University of Washington Tacoma School of Engineering and Technology

24-25 Graduate Certificate in Software Development Engineering program (GC-SDE)

TCSS 504 A Wi 25: Software Engineering and Development Techniques

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Jannine G. D. MacGormain

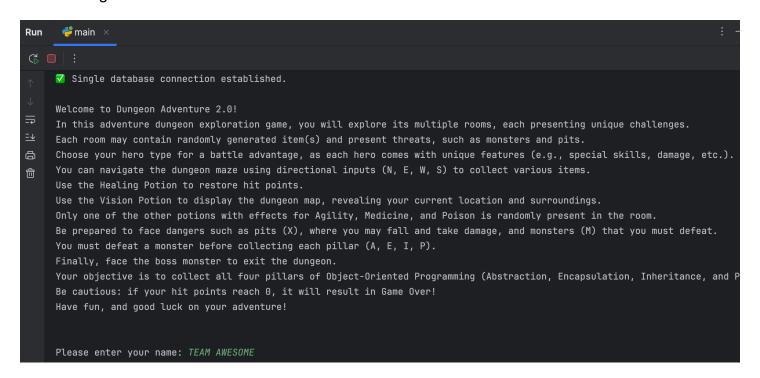
Game play features and Unit Tests

1. Python Source Code

Description: This section provides an overview of the Python source code for the Course Project, focusing on gameplay and mechanics. It highlights the key gameplay functionalities and the features that have been implemented. Additionally, it covers database management and the use of pickling for effective data handling.

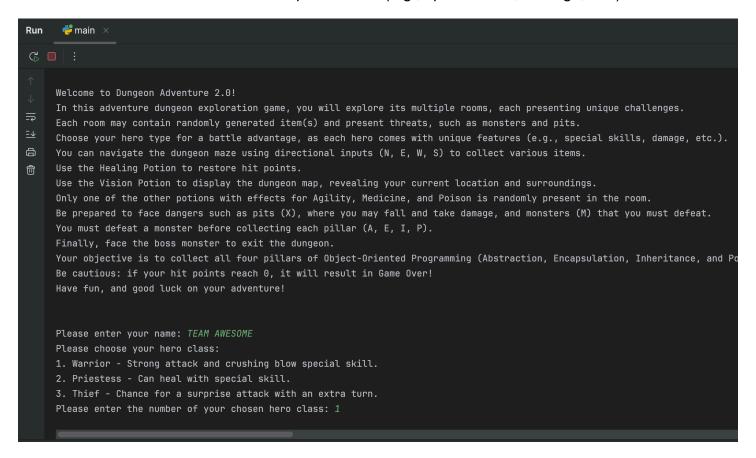
1.1 Game Introduction and Welcome Message:

The player will be welcomed with a game introduction display, explaining the objectives and game mechanics.



1.2 Player Name Entry and Hero Selection:

Description: The player enters a name and chooses a hero type for a battle advantage. Each hero has unique features (e.g., special skills, damage, etc.).



1.3 Player Exploration Mechanics:

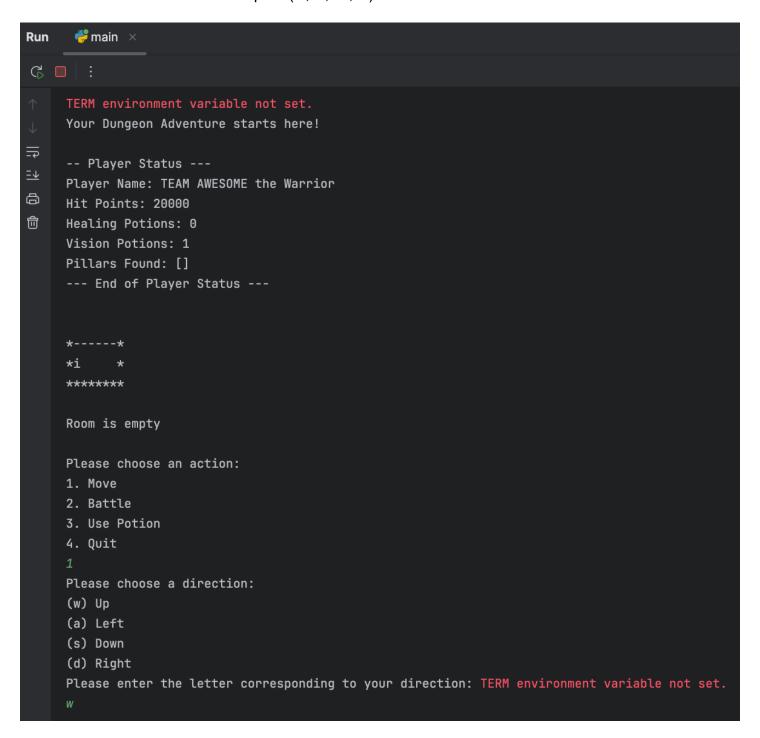
Description: The player will explore a dungeon with multiple rooms.

Each room may contain randomly generated item(s) and present threats, such as monsters and pits.

```
🥰 main 🛛 🗡
Run
G □ :
     TERM environment variable not set.
     Your Dungeon Adventure starts here!
     -- Player Status ---
     Player Name: TEAM AWESOME the Warrior
Hit Points: 20000
⑪
     Healing Potions: 0
     Vision Potions: 1
     Pillars Found: []
     --- End of Player Status ---
     *****
     Room is empty
     Please choose an action:
     1. Move
     2. Battle
     3. Use Potion
     4. Quit
     Please choose a direction:
     (w) Up
     (a) Left
     (s) Down
     (d) Right
     Please enter the letter corresponding to your direction: TERM environment variable not set.
```

1.4 Player Movement:

Description: The player can move around the dungeon maze using directional inputs (N, E, W, S).



1.5 Item Collection:

Description: The player collects healing and vision potions.

```
🥰 main 🗵
Run
G □ :
    -- Player Status ---
    Player Name: TEAM AWESOME the Warrior
    Hit Points: 20000
   Healing Potions: 0
    Vision Potions: 0
□ Pillars Found: []
    --- End of Player Status ---
⑪
     |HVM |
     *****
     --- Ogre Information ---
     Hit Points: 200
     Attack Damage: 30-60
     You collected a Healing Potion!
     You collected a Vision Potion!
     Please choose an action:
     1. Move
     2. Battle
     3. Use Potion
     4. Quit
```

Continuation for 1.5. Item Collection:

Description: The player collects pillars (i.e., A, E, I, P).

```
TEST Status Final Boss Status
Hit Points: 17961
Walding Potions: 0
Vision Potions: 1

Final Boss turn 1 of 1:

Final Boss attacked you. You now have 17817 MP remaining.

Hit Points: TEST Status Final Boss Status
Healing Potions: 1

Your turn 1 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST attacked Final Boss.
Final Boss now has 12 HP remaining.

Hit Points: 17817
Healing Potions: 0
Vision Potions: 0
Vision Potions: 1

Your turn 2 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST attacked Final Boss.
Final Boss now has 2-3 HP remaining.

TEST Status Final Boss Status
Hit Points: 17817
Healing Potions: 0
Vision Potions: 1

TEST attacked Final Boss.
Final Boss now has -2-3 HP remaining.

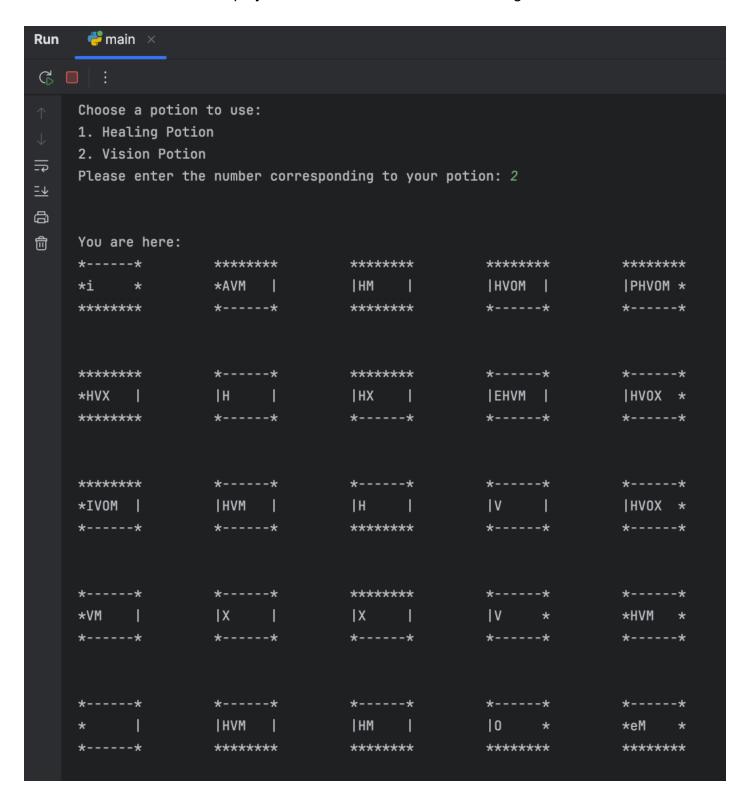
TEST Status Final Boss Status
Hit Points: 17817
Healing Potions: 17817
Healing Potions: 1

Final Boss has been defeated!

Congratulation! You've collected all four pillars, defeated the Final Boss and escaped the dungeon. You win!
maddywhitney@baddys-Macbook-Air-2 5440A_8386 s
```

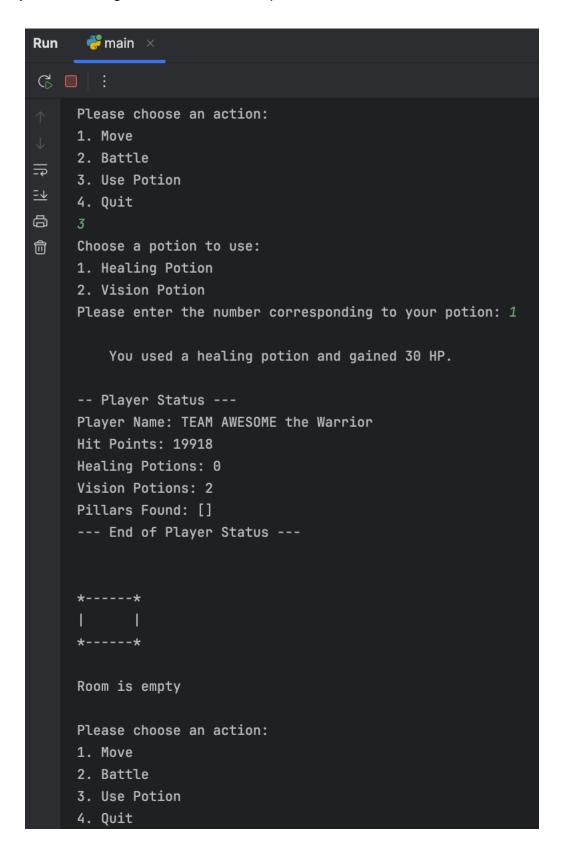
1.6 Item Usage:

Description: Vision Potion to display the dungeon map and reveal the player's current location and surroundings.



Continuation for 1.6. Item Usage:

Description: Healing Potion to restore hit points.



1.7 Other Potions Effects:

Description:

- p Agility: The player picks up an Agility potion and dodges an attack from a monster.
- p Medicine: The player uses Medicine and restores HP from poison inflicted by a monster.
- p Poison: A monster inflicts poison on the player, causing damage.

```
Run
      🥰 main 🔀
G □ :
     Please choose a direction:
     (w) Up
     (a) Left
     (s) Down
     (d) Right
Please enter the letter corresponding to your direction: d
⑪
     -- Player Status ---
     Player Name: TEAM AWESOME the Warrior
     Hit Points: 20000
     Healing Potions: 0
     Vision Potions: 2
     Pillars Found: []
     --- End of Player Status ---
     *****
     |HVX
     The air in this room is sulphurous ~ you took 50 damage!
     You collected a Healing Potion!
     You collected a Vision Potion!
     Please choose an action:
     1. Move
     2. Battle
     3. Use Potion
     4. Quit
```

1.8 Dangers:

Description:

X – Pit: The player falls into a pit and takes damage.

```
Run
      🥰 main 🗵
G □ :
     -- Player Status ---
     Player Name: TEAM AWESOME the Warrior
     Hit Points: 19909
异
     Healing Potions: 1
     Vision Potions: 2
Pillars Found: []
⑪
     --- End of Player Status ---
     |X |
     The air in this room is sulphurous ~ you took 21 damage!
     Please choose an action:
     1. Move
     2. Battle
     3. Use Potion
     4. Quit
     Choose a potion to use:
     1. Healing Potion
     2. Vision Potion
     Please enter the number corresponding to your potion: 1
         You used a healing potion and gained 30 HP.
     -- Player Status ---
     Player Name: TEAM AWESOME the Warrior
     Hit Points: 19918
     Healing Potions: 0
     Vision Potions: 2
     Pillars Found: []
```

Continuation for 1.8. Dangers:

Description:

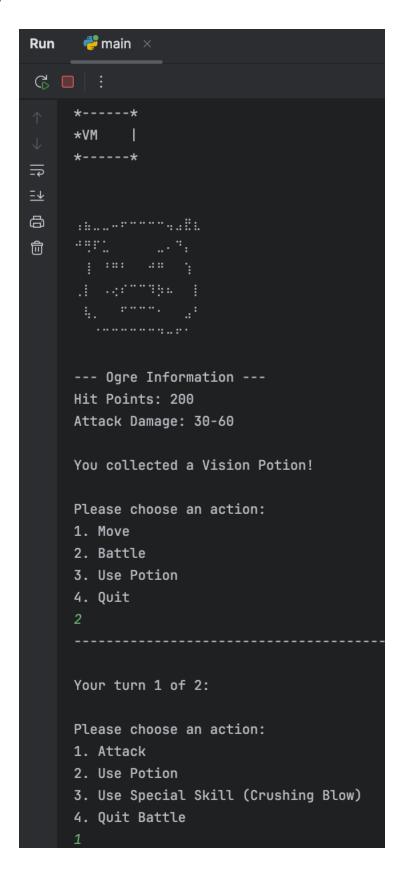
M – Monster: The player fights a monster and a boss monster.

Each monster has unique features (i.e., damage, chance to heal, etc.).



1.9 Combat Mechanics with Monsters and Boss Monster:

Description:



The player must defeat a monster before collecting each pillar found (i.e., A, E, I, P).

The player faces the boss monster and must defeat it to exit the dungeon.

```
/usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/504/504DA_0306 at /usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/504/504DA_0306 / usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/504/504DA_0306 / usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/504/504DA_0306/main.py

**Welcome to Dungeon Adventure 2.0!**
In this adventure dungeon only opticities and present threats, such as monitors and pits
Choose your hero type for a battle advantage, as each hero comes vith unique features (e.g., special skills, damage, etc.).

You can navigate the dungeon maze using directional inputs (N, E, W, S) to collect various items.

Use the Healing Potion to restore his points.

Use the Healing Potion to restore his points.

Use the Vision Potion to display the dungeon map, revealing your current location and surroundings.

Only one of the other potions with effects for Agility, Medicine, and Posions is randomly present in the room.

De prepared to face dangers such as pits (X), where you may fall end take danage, and monsters (M) that you must defeat.

To finally, face the boss sonoter to exit the dungeon.

Your objective is to collect all four pillars of Object-Oriented Programming (Abstraction, Encapsulation, Inheritance, and Polymorphism), find the exit, and defeat the boss monster guarding it to win the game.

Be cautious: if your hit points reach 0, it will result in Game Over!

Your Dungeon Adventure starts here!

A Final Boss appears at the exit!

Your Dungeon Adventure starts here!

A Final Boss appears and the exit!

Your Dungeon Adventure starts here!

Your Dungeon Adventure starts here!
```

```
Your Dungeon Adventure starts here!

A Final Boss appears at the exit!

Your turn 1 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST failed to attack Final Boss.

IEST Status Final Boss Status
Hit Points: 20000
Healing Potions: 1

Your turn 2 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST attacked Final Boss.
Final Boss status
Hit Points: 20000
Healing Potions: 0

Vision Potions: 1

Final Boss turn 1 of 1:
No action taken.

IEST Status Final Boss Status
Hit Points: 20000
Healing Potions: 0

Vision Potions: 1

Your turn 1 of 2:
Please choose an action:
1. Attack
3. Use Special Skill (Crushing Blow)
4. Quit Battle
```

```
TEST Status Final Boss Status
Hit Points: 17901
Healing Potions: 0
Vision Potions: 1

Final Boss turn 1 of 1:

Final Boss attacked you. You now have 17817 HP remaining.

TEST Status Final Boss Status
Hit Points: 17817
Healing Potions: 0
Vision Potions: 1

Your turn 1 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Ouit Battle
1

TEST attacked Final Boss.
Final Boss now has 12 HP remaining.

TEST attacked Final Boss.
Final Boss now has 12 HP remaining.

12

Wision Potions: 1

Your turn 2 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST attacked Final Boss.
Final Boss now has 12 HP remaining.

TEST status Final Boss Status
Hit Points: 17817
Healing Potions: 0
Vision Potions: 1

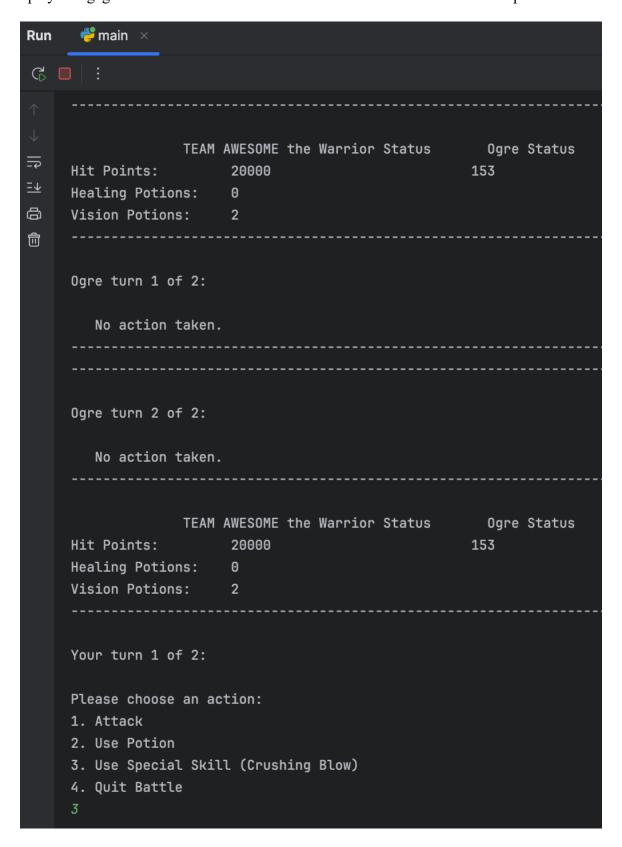
TEST attacked Final Boss.
Final Boss now has -73 HP remaining.

TEST status Final Boss Status
Hit Points: 17817
Healing Potions: 0
Vision Potions: 0

TEST Status Final Boss Status
Final Boss now has -73 HP remaining.

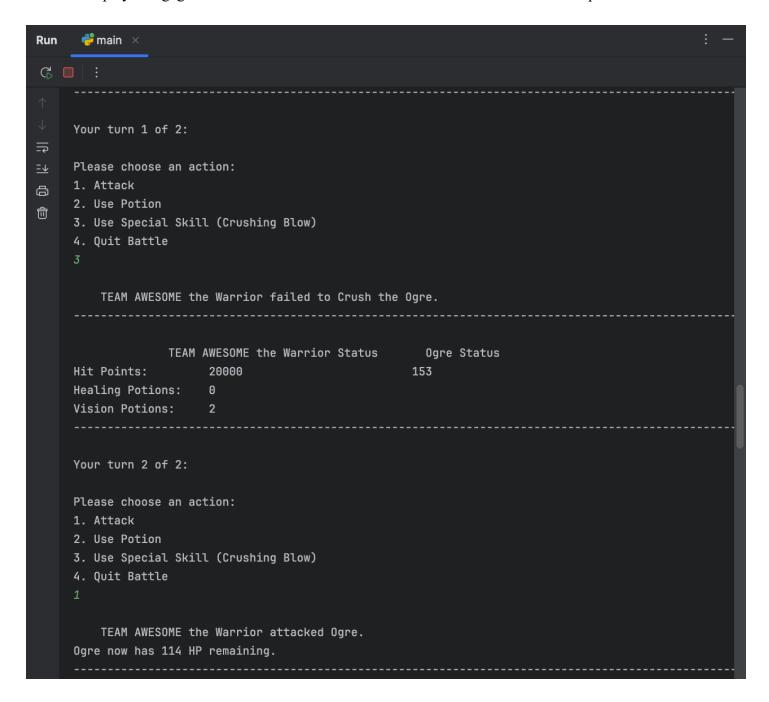
TEST attacked Final Boss.
Final Boss now has -73 HP remaining.

TEST Status Final Boss Status
Hit Points: 17817
Healing Potions: 0
Vision Potions: 0
Vision Potions: 0
Vision Potions: 0
Final Boss has been defeated!
```



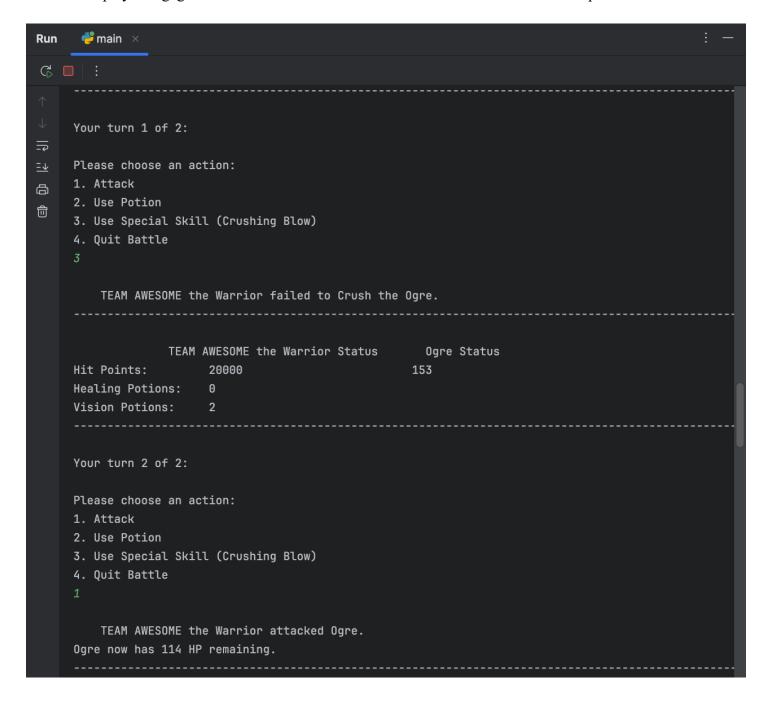
Continuation for 1.9. Combat Mechanics with Monsters and Boss Monster:

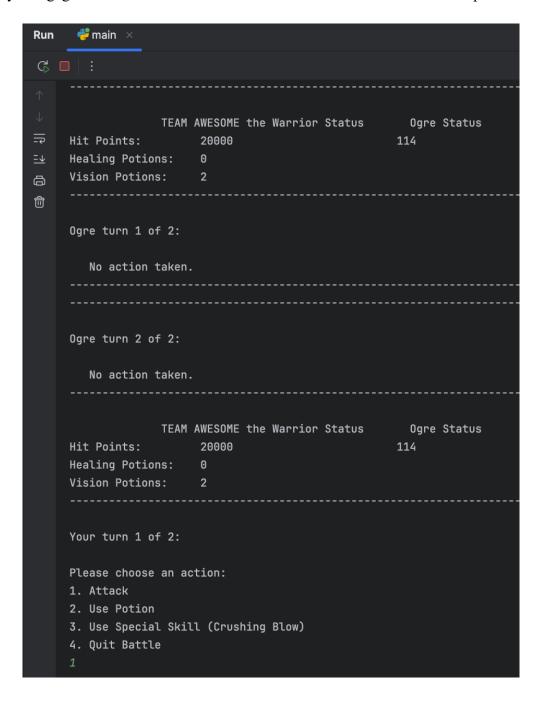
Description:

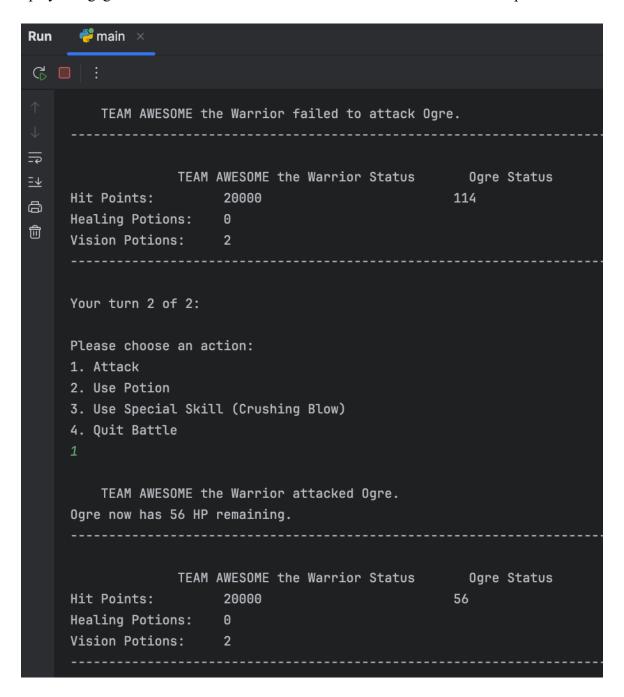


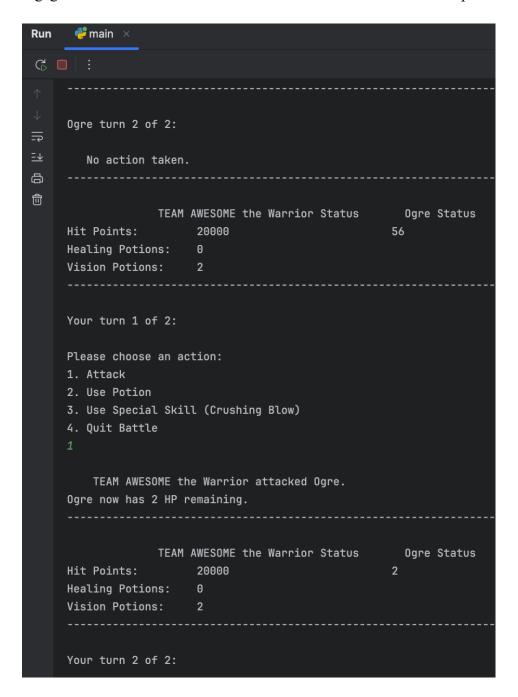
Continuation for 1.9. Combat Mechanics with Monsters and Boss Monster:

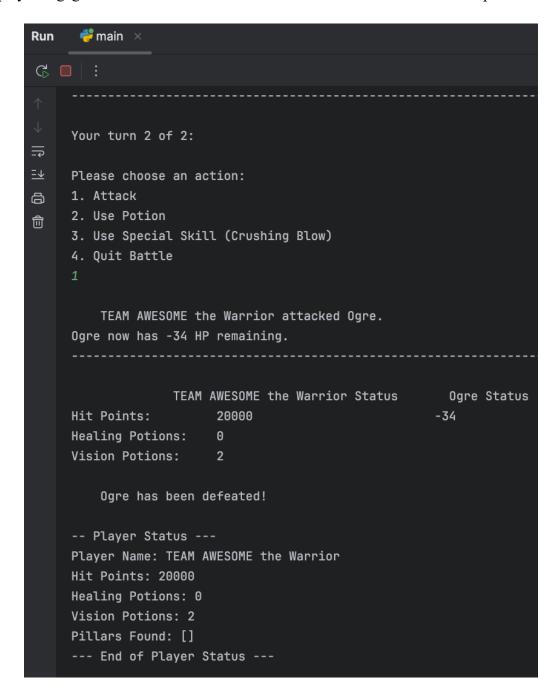
Description:











1.10 Quit and Save Game:

Description:

The player can quit the game at any time. The player can choose to start a new game or continue the player's saved game from where the player left off.

```
🗬 main 🔀
Run
     -- Player Status ---
     Player Name: TEAM AWESOME the Warrior
     Hit Points: 19950
     Healing Potions: 1
Vision Potions: 3
     Pillars Found: []
     --- End of Player Status ---
     *----*
     *i
     *****
     Room is empty
     Please choose an action:
     1. Move
     2. Battle
     3. Use Potion
     4. Quit
     Are you sure you want to quit?
     1. Yes
     2. No
     Please enter the number corresponding to your choice: 1

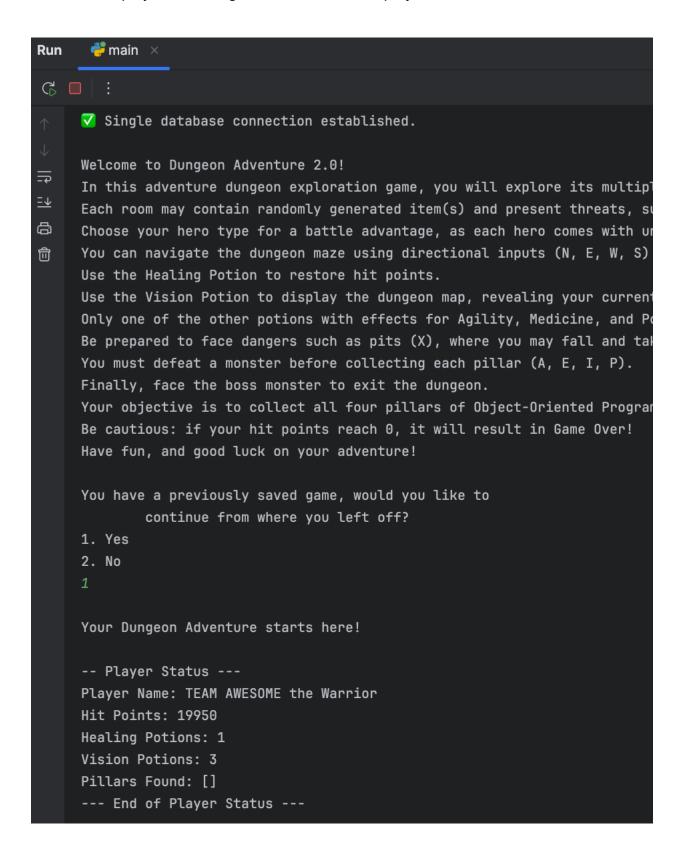
▼ Database connection closed successfully.

     Thank you for playing!
     ...saving game for later use...
     Process finished with exit code 0
```

Continuation for Quit and Save Game:

Description:

The player can quit the game at any time. The player can choose to start a new game or continue the player's saved game from where the player left off.



1.1 Winning Condition:

Description:

The player must collect all four pillars of Object-Oriented Programming (Abstraction,

Encapsulation, Inheritance, and Polymorphism), find the exit, and defeat the final boss monster to win the game.

```
/usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashinpton/Software_Engineering/S84/S84DA_8386/main.py

□ saddywhitney8dadys-MacBook-Air-2 S84DA_8386 % /usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/584/584DA_8386/main.py

□ saddywhitney8dadys-MacBook-Air-2 S84DA_8386 % /usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/584/584DA_8386/main.py

□ saddywhitney8dadys-MacBook-Air-2 S84DA_8386 % /usr/local/bin/python3 /Users/maddywhitney/Documents/School/University_of_Mashington/Software_Engineering/584/584DA_8386/main.py

□ saddywhitney8dadys-MacBook-Air-2 S84DA_8386 % /usr/local/bin/python3 /Users/macBook-Air-2 S84DA_8386/main.py

□ welcome to Dungeon Adventure 2.8!

In this adventure dungeon exploration game, you will explore its multiple rooms, each presenting unique challenges.

Each room MacVocation and present threats, such as monsters and pits.

□ You can navigate the dungeon maze using directional inputs (N, E, N, S) to collect various teles.

Use the tealing Potion to restore hit points.

Use the tealing Potion to restore hit points.

Use the Vision Potion to display the dungeon map, revealing your current location and surroundings.

Use the Vision Potion to display the dungeon map, revealing your current location and surroundings.

Use the tealing Potion to display the dungeon map, revealing your current location and surroundings.

Use the Vision Potion to display the dungeon map, revealing your current location and surroundings.

Use the Vision Potion to display the dungeon map, revealing your current location and surroundings.

In this defeat a monster grade of the vision provided the potion to display the dungeon map and potion to reveal the vision provided the vision provided the vision provided the vision provided the vision Potion to display the dungeon map and vision to reveal the vision provided the vision provided the vision provided the vision provided the
```

```
Your Dungeon Adventure starts here!

A Final Boss appears at the exit!

Your turn 1 of 2:

Please choose an action:
1. Attack
2. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST failed to attack Final Boss.

His Toints: 20000
Moaling Potions: 0

Your turn 2 of 2:

Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST Status Final Boss Status
1000

Final Boss snow has 956 HP remaining.

TEST Status Final Boss Status
His Points: 20000

Mission Potions: 0

Vision Potions: 0

Vision Potions: 1

Final Boss turn 1 of 1:
No action taken.

His Toints: 20000
Moaling Potions: 0

Vision Potions: 1

For Status Final Boss Status
His Points: 20000
Mission Potions: 0

Vision Potions: 1

Vour turn 1 of 2:

Please choose an action:
1. Attack
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
3. Use Special Skill (Crushing Blow)
4. Quit Battle
4. Quit Battle
5. Quit Battle
6. Quit Battle
7. Attack
7. Use Potion 9. Use Po
```

```
TEST Status Final Boss Status
Hit Points: 17961
Healing Potions: 0
Vision Potions: 1

Final Boss turn 1 of 1:

Final Boss turn 1 of 2:

Please choose an action:
1. Attack
Vision Potions: 0
Vision Potions: 1

TEST Status Final Boss
Final Boss now has 12 HP remaining.

TEST Status Final Boss.
Final Boss now has 12 HP remaining.

TEST Status Final Boss Status

Hit Points: 10

Vour turn 2 of 2:

Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST Status Final Boss Status
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
1

TEST Status Final Boss Status
Hit Points: 17817

Final Boss how has -23 HP remaining.

TEST Status Final Boss Status
Hit Points: 17817

Hit Points: 17817

Final Boss has been defeated!

Congratulation! You've collected all four pillars, defeated the Final Boss and escaped the dungeon. You win!
```

1.2 Losing Condition:

Description: If the player's hit points reach 0, it will result in Game Over!

```
TEST failed to attack Final Boss.
                 TEST Status
                                       Final Boss Status
Hit Points:
                                                        961
Healing Potions:
Vision Potions:
                        0
Final Boss turn 1 of 1:
   No action taken.
                 TEST Status
                                       Final Boss Status
Hit Points:
                        1
Healing Potions:
Vision Potions:
                        0
                        1
Your turn 1 of 2:
Please choose an action:
1. Attack
2. Use Potion3. Use Special Skill (Crushing Blow)
4. Quit Battle
TEST attacked Final Boss.
Final Boss now has 902 HP remaining.
                 TEST Status
                                       Final Boss Status
Hit Points:
Healing Potions:
Vision Potions:
                        0
                        1
Your turn 2 of 2:
Please choose an action:
1. Attack
2. Use Potion
3. Use Special Skill (Crushing Blow)
4. Quit Battle
    TEST failed to attack Final Boss.
                 TEST Status
                                      Final Boss Status
Hit Points:
                        1
Healing Potions:
Vision Potions:
                        0
Final Boss turn 1 of 1:
    Final Boss attacked you. You now have -140 HP remaining.
You were slain in battle, the game is over. maddywhitney@Maddys-MacBook-Air-2 504DA_0306 %
```

2. Unit Tests

Description:

Preliminary unit tests and Final Unit Tests were conducted to ensure that the functions performed as intended.

```
TA TeamAwesomeDungeonAdventure2.0 🗸 🙄 main 🗸
🕏 unit_tests_for_Room_ItemFactory_MonsterFactory.py 🗡 🍦 unit_tests_dungeon.py
                                                                            unit_tests
        import unittest
        from room import Room
        from pillar import Pillar
        from potion import Potion
        from other_potion import OtherPotion
        from environmental_element import EnvironmentalElement
        from monster_factory import MonsterFactory, Ogre, Gremlin, Skeleton
        class TestRoom(unittest.TestCase):
 13 ©
            def setUp(self):
                # Set up a new room instance for each test without random contents.
                self.room = Room(initialize_contents=False)
            def test_room_initialization(self):
                self.assertFalse(self.room.has_healing_potion)
                self.assertFalse(self.room.has_vision_potion)
                self.assertIsNone(self.room.has_other_potion)
                self.assertFalse(self.room.has_pit)
                self.assertFalse(self.room.is_entrance)
                self.assertFalse(self.room.is_exit)
                self.assertIsNone(self.room.pillar)
                self.assertIsNone(self.room.monster)
      \red{?} Python tests in unit_tests_for_Room_ItemFactory_Mons... 	imes
Run
0 ms Vertex passed: 12 of 12 tests - 0 ms
Test Results
                       /Users/jannine_g._d.macgormain/PycharmProjects/PythonProject/Te
                       Testing started at 3:45 AM ...
                       Launching unittests with arguments python -m unittest /Users/ja
                       Ran 12 tests in 0.001s
```

```
TA TeamAwesomeDungeonAdventure2.0 > pmain >
unit_tests_dungeon.py ×  unit_tests_for_Room_ItemFactory_MonsterFactory.py
                                                                            unit_tests_for_DungeonCharacter_Heroes_and_Monsters.py
          def setUp(self):
               self.dungeon = Dungeon(width=5, height=5)
Run
     Python tests in unit_tests_dungeon.py ×
G G G □ ✓ Ø ↓ ⊑ ₾ ⊙ :

✓ Test Results 0 ms 
✓ Tests passed: 6 of 6 tests – 0 ms

                       YOU ARE HERE!
                                                                                       Room(0, 3)
                       Room(0, 0)
                                            Room(0, 1)
                                                                 Room(0, 2)
                                                                                                            Room(0, 4)
                                            * 0 H V X |
                                                                  * i H X *
                                                                                       | H V X *
                                                                                                            | H X *
                       |iHVX|
                       Room(1, 0)
                                            Room(1, 1)
                                                                 Room(1, 2)
                                                                                       Room(1, 3)
                                                                                                            Room(1, 4)
                       * H V X |
                                            * V X |
                                                                  * i H p M |
                                                                                       | p M |
                                                                                                            I \times I
                                                                                                            ***
                       Room(2, 0)
                                            Room(2, 1)
                                                                 Room(2, 2)
                                                                                                            Room(2, 4)
                                                                                       Room(2, 3)
                       * A H V M |
                                            * H p M |
                                                                  * I H V M |
                                                                                       | H V X |
                                                                                                            * P M |
                                                                                       ***
                       Room(3, 0)
                                            Room(3, 1)
                                                                 Room(3, 2)
                                                                                       Room(3, 3)
                                                                                                            Room(3, 4)
                                            ***
                       | V X *
                                            | V X |
                                                                  | H V p M |
                                                                                       | H X *
                                                                                                            * p M *
                       ***
                                            *-*
                                                                  *-*
                                                                                       ***
                                                                                                            *-*
                                                                                       Room(4, 3)
                       Room(4, 0)
                                            Room(4, 1)
                                                                  Room(4, 2)
                                                                                                            Room(4, 4)
                       *-*
                                            *-*
                                                                                       ***
                       * H X |
                                            * V p M |
                                                                  | O H V p M *
                                                                                       | p M |
                                                                                                            | 0 P H V M *
```

