Project 3 Interview Grading Rubrics -- Pokemon (100 points)

**Possible Deductions: 30 points**

| Function | Total Awarded Points | Comments |
|---|---|---|
| Project Meeting | 10 | |
| Project Skeleton | 10 | |
| Project Report | 10 | |

### A.  Minimum Requirements met: 20 points

| | |
|---|---|
| 4 or more user defined classes | 8 (2 for each class) |
| 6 or more if and else if statements | 2 |
| 4 while, 4 for, or more loops, 2 or more nested loops | 1 |
| array of user defined objects | 2 |
| at least 2 classes should have 4 data members. | 2 |
| File IO read data | 2 |
| File IO write data | 1 |
| 2D environment data (char 2D array or object 2D array) | 2 |

**B. Comments, Style, use of Global Variables, and Questions asked during grading interview: 20 points**

**C. Function calls and calculations (Short version): 60 points total.**
*Please note that 20 of these points (in green **bold-face**), will be assigned during grading interview only if implementation explanation is provided by the student. The other 40 points will be established simply by running your program*

| | Tasks (student may take different approaches to solve each of these tasks) | Points Awarded |
|---|---|---|
| A | Game Initialization - read the text files | 6 |
| B | Game initialization - choose user name and choose a Pokemon | 2 |

| C | Game initialization - initial random locations of wild Pokemon | 5 |
|---|---|---|
| D | Game initialization - 15 Trainers with 1-6 random Pokemon | 3 |
| E | Print minimap | 2 |
| F | Print stats every turn: number Pokeballs and all Pokemon | 2 |
| G | Take Turn - Travel | 3 |
| H | Take turn - Rest | 1 |
| I | Take turn - Try your Luck | 1 |
| J | Random Movement of other Pokemon | 4 |
| K | Encounters: when do they happen, with wild Pokemon or Trainer | 1 |
| L | Fight; one round, repeated rounds | 6 |
| M | Switch Active Pokemon | 2 |
| N | Run; flee for wild Pokemon | 3 |
| O | Heal; transport to Pokemon Center, restore stats | 3 |
| P | Level Up; do not exceed Max | 2 |
| Q | Win encounter; acquire wild Pokemon or all Trainer's Pokemon | 3 |
| R | Earn badges, Pokeball, points, after win | 2 |
| S | Random Events (Wild Pokemon, Treasure, Death) | 3 |
| T | Game end conditions | 3 |
| U | Write points to file | 1 |
| V | Anticipate user error | 2 |

## Other function calls and calculations (Detailed version): 60 points

| | Tasks | | Deductions |
|---|---|---|---|
| A | **Game Initialization - read the text files**<br>- Read 2 files (3 p for each)<br>- Initializes all variables related to files(all Pokemon initial stats, map with Gyms and Centers information, land vs water) | 6 | |

| B | **Game initialization - user name and choose Pokemon**<br>- Ask for player name (0.5)<br>- Output greeting with player's name (0.5)<br>- Ask user to choose a Pokemon (0.5) and set that Pokemon to be the active one (0.5) | 2 | |
|---|---|---|---|
| C | **Game initialization - initial random locations of wild Pokemon**<br>- 20 random locations (0.5):<br>    - random row value<br>    - random column value<br>- Follows the rules: a wild Pokémon cannot start:<br>  ● at the same location as a Pokémon Center (0.5)<br>  ● at the same location as a Pokémon Gym (0.5)<br>  ● at the same location as the main player (0.5)<br>  ● on a tile that is on water (0.5)<br>  ● on a tile that is already occupied by another wild Pokémon (1)<br>- If rules are not followed, try again (0.5)<br>**- Show full map with all Pokemon as "P" (1) - recommended for debugging purposes** | 5 | |
| D | **Game initialization - 15 Trainers with 1-6 random Pokemon**<br>- Same locations as Gyms (0.5)<br>- Random number between 1 and 6 (1)<br>- Random Pokemon among the 151 in database (0.5)<br>- Pokemon must be **different** (1) | 3 | |
| E | **Print minimap**<br>- should print at the beginning of every turn (0.5)<br>- prints an area 7x7 (1)<br>- prints less than 7x7 if Player location is closer than 2 moves from the edge of the map (0.5) | 2 | -0.5: does *not* print ~ for water tiles and * for land tiles |
| F | **Print number of Pokeball and all Pokemon stats**<br>- should print at the beginning of every turn (0.5)<br>- prints number of Pokeball (0.25)<br>- prints stats for all Pokemon in Player's party (1 - 0.2 for each): name, HP, Attack, Defense, Speed, Max<br>- clearly points out the Active Pokemon (0.25) | 2 | |
| G | **Take Turn - Travel**<br>- ask user to choose between 4 possible directions of travel (0.5)<br>- check that desired direction of travel results in a valid new location<br>  ● Cannot travel to *water* (0.5)<br>  ● Cannot travel *out-of-bounds* (0.5)<br>  ● Must move, can't stay in the same location (0.5)<br>- if not, ask again (0.5)<br>- update new location for main Player (0.5) - this should be reflected on the minimap | 3 | |
| H | **Take turn - Rest**<br>- location does not change (0.25) - this should be reflected on the minimap | 1 | |

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| | - each Pokémon in the player's party increases their HP by 1 (0.5)<br>- the number of Pokéballs goes down by 1 (0.25) | | |
| I | **Take turn - Try you Luck**<br>- location does not change (0.25)<br>- the number of Pokeballs does not change (0.25)<br>- if wild Pokemon in 7x7 proximity is found (0.25)<br>- that wild Pokemon is caught (0.25) | 1 | |
| J | **Random Movement of wild Pokemon**<br>- generate random direction: one of any 4 possible directions of travel (0.5)<br>- check that desired direction of travel results in a valid new location<br>   ● Cannot travel to *water* (0.25)<br>   ● Cannot travel *out-of-bounds* (0.5)<br>   ● Cannot travel to Pokémon Center (0.25)<br>   ● Cannot travel to Pokémon Gym (0.25)<br>   ● Not be at the same location as the main player (0.5)<br>   ● Cannot travel on a tile that is already occupied by another wild Pokémon (0.5)<br>- if not, ask again (0.25)<br>- update new location for each wild Pokemon (1) - **once again here, having a full map with all Pokemon as "P" is recommended for debugging purposes** | 4 | |
| K | **Encounters - when should they be initiated**<br>**-** correctly establishes if encounter occurs based on proximity to wild Pokemon (0.5)<br>- encounter always occurs if Player travels to Gym (0.5) | 1 | |
| L | **Fight; one round, repeated rounds**<br>- If this is the first or the second wild Pokémon the player encounters, the wild Pokémon will automatically join the player's active party (0.5)<br>- In all other cases, there is a 60% chance the wild Pokémon will attack (0.25)<br>- Pokemon wants to flee (*points awarded at the category 2 rows below*)<br>- highest Speed value will attack first (0.25)<br>- generate A and D (random values) (0.5)<br>- compute and print damage (0.25)<br>- update and print new HP for damaged Pokemon (0.25)<br>- there is a similar second attack phase (0.25)<br>*Scenario A*: If the wild Pokémon is the one who fainted,<br>   ● its HP is automatically restored (0.25)<br>   ● it will join the player's party (0.25)<br>   ● the *Active* Pokémon who won the battle *levels up* (0.25)<br>   ● **and the turn ends** (0.25)<br>*Scenario B*: If the player's Pokémon is the one who fainted, then<br>   ● The Pokémon who fainted will not be able to be sent into battle, until its HP will be restored during the next visit to a Pokémon Center (0.25)<br>   ● The wild Pokémon *levels up* (0.25)<br>   ● the dialog goes back to the main battle menu (with the three options: Fight, Switch Pokémon, and Run), which will allow the player the choice to send out another | 6 | |

Pokémon to take its place, drawn from his or her party. (0.25)

*Scenario C*: If the player's Pokémon is the one who fainted, and if this was the last awake Pokémon in the player's party, then all Pokémon in the party are now fainted.

- The player loses the battle, (0.25)
- The player is teleported to the nearest Pokémon Center (where the appropriate procedure is being followed). Compute the "Nearest Center" as number of moves needed to reach the Pokémon Center.(0.5)
- Nearest Pokémon Center computed correctly (0.5)
- The wild Pokémon *levels up.(*0.25)
- **And the turn ends (0.25)**

**Outcome 2:** If at the end of both attack phases, the Pokémon are still both alive, the dialog goes back to the main battle menu (with the three options: Fight, Switch Pokémon, and Run). (0.25)

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| M | **Switch Active Pokemon**<br>- Present the user with **correct** remaining Pokemon (0.5)<br>- Upon choice, the display of the Player's party changes accordingly, with the new choice marked as "Active" (0.5) | 1 | |
| N | **Run; flee for wild Pokemon**<br>- calculate and print A (0.25), B (0.25), C (0.25), F (0.25)<br>- decide by random chance if Player/Pokemon escapes (0.5)<br>- For Player, if escape is successful, they will teleport to the nearest Pokemon Center. (0.5)<br>- For Player, When the escape is not successful, the player will return to the battle menu (with the three options Fight, Switch Pokémon, and Run) (0.5)<br>- For wild Pokémon, If escape is successful, then it will teleport to a random location on the board (Note: all previous rules with regards to locations apply) (0.5) **Print their escape location if escape successful! - once again here, having a full map with all Pokemon as "P" is recommended for debugging purposes** | 3 | |
| O | **Heal; transport to Pokemon Center, restore stats**<br>- all Pokémon will be healed to full HP (0.5)<br>- Player is given the chance to reorganize their Pokémon suite (0.25).<br>- Present the user with the opportunity to select any Pokémon from their Pokédex into their suite (0.25)<br>- Switch occurs correctly. The active party is updated correctly (0.5), and the Pokedex stays the same (0.5)<br>- Choose the Active Pokémon (0.25)<br>- They cannot have more than 6 Pokémon in their suite/party (0.25)<br>- the starting location for the next turn is the location of the Pokémon Center. Minimap shows correct location next turn (0.5) | 3 | |
| P | **Level Up; do not exceed Max**<br>- For each level gained, the following stats will increase by 1/50 (or 2%) of the **base stat values**: HP, Attack, Defense, Speed. All values round up to the nearest integer.<br>- All 4 values above update correctly for the first "level up" (0.25 each)<br>- Max is not exceeded (0.5) | 2 | |

| | | | |
|---|---|---|---|
| | - All 4 values above update correctly **after** the first "level up", aka the increases of 1/50 accumulate with each "level up" (0.5) | | |
| Q | **Win encounter; acquire wild Pokemon or all Trainer's Pokemon**<br>- When a Pokemon joins the Player (either a wild one, or one of the ones previously owned by Trainer)<br>   - if Player has less than 6 Pokemon, then the new one joins the Active Party (0.5)<br>   - if Player has more than 6 Pokemon:<br>     - ask if Player wants to add it to Active Party (0.25)<br>     - if "Yes", Active Party changes (0.5), choose a new Active Pokemon (0.5), and the Pokemon who is not in the Active Party is still in the PokeDex (0.25).<br>- Either way, new Pokemon is added to the Pokedex (0.5)<br>- Procedure repeats in order for all the Pokemon from a losing Trainer (0.5) | 3 | |
| R | **Earn badges, Pokeball, points, after win**<br>- all Pokemon in the Active Party level up (0.25)<br>- earn 1 badge (0.25), 5 Pokeballs (0.25), 60 points (0.25)<br>- If the player happens to be on the same tile as this particular Gym in the future, **the player will not be able to battle the Trainer again**. (1) | 2 | |
| S | **Random Events (Wild Pokemon, Treasure, Death)**<br>*Scenario A*:<br>- compute probability 30% for Wild Pokemon (0.25)<br>- present choice to catch/release (0.25)<br>- wild Pokemon joins the party (or disappears) (0.25)<br>- Pokeballs go down by 1 (0.25)<br>*Scenario B*:<br>- compute probability 25% for treasure (0.25)<br>- Print correct message and or choice menu (0.25)<br>- award 2 Pokeballs (0.25)<br>- one Pokemon levels up (0.25)<br>*Scenario C*:<br>- compute probability 20% for Pokemon death (0.25)<br>- if "yes" pick one Pokemon from party at random (0.25)<br>- remove Pokemon from party and Pokedex (0.25)<br>- choose a new Active Pokemon, if necessary (0.25) | 3 | |
| T | **Game end conditions:**<br>**1.** The player chooses to end the game. In this case, the player **loses** the game (0.25)<br>**2.** The player earns 6 Badges. The player **wins**. (0.25)<br>**3.** The player acquires Pokémon of 8 different types. The player **wins**. (0.5) - **student has a function/method for counting the number of different types in Pokedex - recommended**<br>- Print appropriate message (0.25)<br>- Ask if they want to play again (0.25)<br>- If "Yes"<br>   - Map stays the same (0.25)<br>   - Reset all data for the Player (0.25), 20 wild Pokemon (0.5), and 15 Trainers (0.5) | 3 | |

| U | **Write points to file**<br>- Write the first Player results to file (0.5)<br>- Append the next Player results to file (0.5) | 1 | |
|---|---|---|---|
| V | **Anticipate User Error**<br>- checks for user error (user must enter only NEWS for "Travel", or only choices between 1 and 4) (1)<br>- Continues to check for user error at most menu options (1) | 2 | |