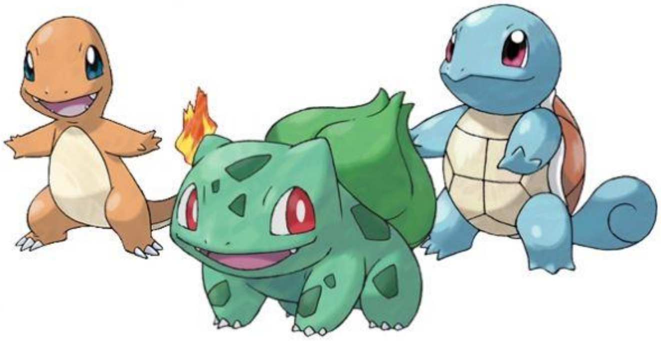

PROJECT 1

<Pokémon Game>

CONNOR KELLEY
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Introduction

Title: Pokémon Game

Pokémon is a turn-based battle game that involves attacking or running if you need to. In this game, the object is to battle different monsters to gain experience and eventually level up if enough experience is accumulated. The ultimate goal of the game is to get to a high enough level, and to get your Pokémon to a strong enough strength to be able to take on the world of Pokémon with ease. This is a turn based battle game. The user is allowed to opportunity to attack the foe but then the foe is allowed to attack the user back directly afterward. The first player to have their health fall below the fatal level of "0" loses. The object of the game then, is to get your opponent's health to fall below zero before they get yours to fall below zero.

Summary

Project Size: 237 Lines

Number of Variables: 15

Number of Functions: 6 + main

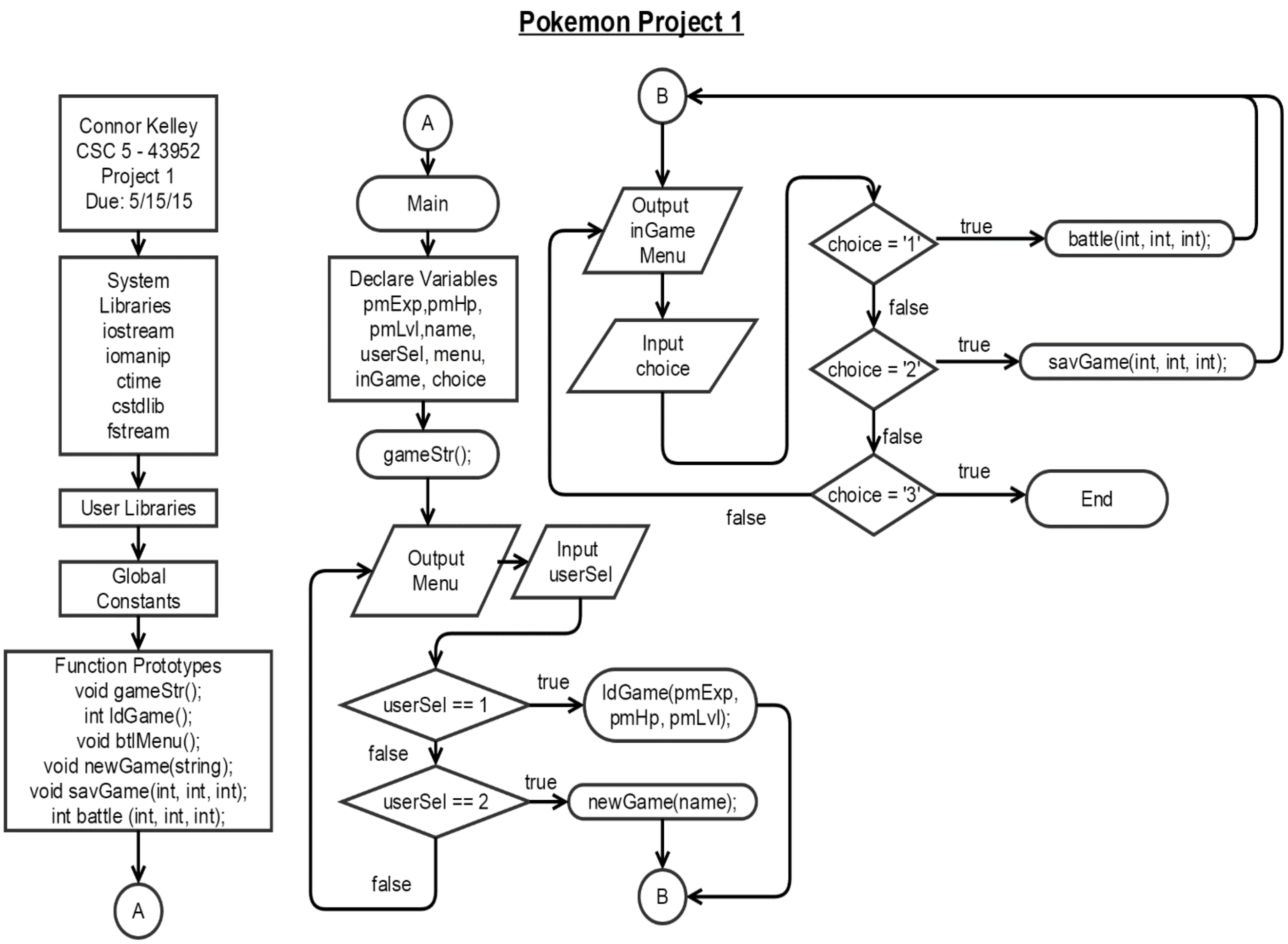
In my game program I was able to use multiple data types including strings, integers, and floats. I utilized the file save and load input/output functions programmed into the fstream system library. I also tapped into the ctime and cstdlib to create random numbers to calculate attack damage. On multiple occasions I used if statements to determine and calculate how powerful of an enemy the user would face. Additionally, I used loops to keep the user engaged in the menu selection until they opted to exit the game entirely. I used six different functions to break up some of the menu and introductory dialogue in the game. Doing this, I experienced some difficulty passing data through functions and having the data return back to main. In my program, there are a lot of improvements that I will need to make in order to improve the way the gameplay functions. Some algorithms that I used to determine enemy health and levels are sometimes wonky, often giving out too high of numbers. I will modify this in the second version as well as add more functionality and dynamic elements to the battle gameplay itself.

This project took me well over a week to complete. I have zero experience programming and developing games so this was definitely a wakeup call. Many challenges that I faced I used the Gaddis book for reference or I searched online, usually stackoverflow.com or cplusplus.com.

Description

The purpose of my program is to create a function game which engages the user in combat with a random number generated PC enemy.

Flow Chart



Pseudo Code

```
//System Libraries
//c standard
//input output stream
//input output manipulation
//c time
//file stream
//User Libraries
//Global Constants
//Function Prototypes
  //Return Experience Points attained
  //Return information about pokemon

//Execution Begins Here!
  //Declare Player Variables
  //Pokemon Experience
      // Pokemon Hit points
```

```
        //Pokemon Level
        //Player Name
  //Other Variables
  //Start Game
  //Game Menu to load or start new game
//If selection is 1 then load a previous game
//If selection is 2 then start a new game
//If selection does not match case, notify and print the menu again
  //Start the in-game menu...
  //If user select 1 then start the battle sequence function
        //if the user selects 2 then save the game
        //if the user selects 3 then exit the program
  //Exit Stage Right!

//Function for Game start
  //Display starting content (TITLE SCREEN)
  //Wait for the user to press 'Enter'
//Function to Load Previous Game
  //Must load the name of the player
        //save all variables related to pokemon
//Function to Create New Game
  //Introduction to game and game play
  //Player enters their name
  //Opening Dialogue... Information about game play
  //Collect the name of the player
  //Eventually insert information about the starter Pokemon?
  //Would this be useful? Maybe some stats?

//Function to Save Previous Game
//Saves:
  //Name
  //Pokemon level

//Function to initiate battle sequence...
  //Initialize random number seed
  //Declare Variables
//Foe's HP
//Foe's Strength Value
//Foe's Level
//Pokemon Strength
 //Calculate the enemy's level,hit points
  //Output Battle Sequence...
  //Output Enemy Stats!
//Output battle selection
//if user enters 1 then attack!
        //Attack the enemy!
//if user enters 2 then roll to run away safely
  //Determine win or lose
//if lose then decrease level
//if win then increase experience
  //Exit Stage Right!
```

Major Variables

Type	Variable Name	Description	Location
Integer	pmExp	Pokémon Experience	Int main() Int battle()
	pmHp	Pokémon Hit Points – The health of the Pokémon. The larger the value the longer it will take to defeat it.	Int main() Int battle()
	pmLvl	Pokémon Level – this value is then used to manipulate attack damage and health	Int main() Int battle()
	fHp	The enemy player's hit points	int battle()
	fStrng	The enemy player's strength value, or attack value.	int battle()
	fLvl	The enemy player's level. Used in an algorithm to construct the hit point and strength or attack value of their Pokémon.	int battle()
	pmStrng	The user Pokémon's strength value, or attack value.	int battle()
	userSel	User Selection – used to guide menu algorithms	Int main()
	randNum	A randomly generated number according to ctime library.	int battle()
const int	SIZE	The size of the array to store random health values for the enemy players fHp.	int battle()
int[]	hpAry[]	This array stores the randomly generated enemy hp values.	int battle()
Bool	menu	Menu driven algorithm	Int main()
	inGame	Menu driven algorithm	Int main()
String	name	Used to store the name of the user	Int main() void savGame(string)

Char	choice	User choice used to operate switch	int main()
	select	User select used to operate switch	int battle()
ifstream	inFile	Used to load the Pokémon’s experience, hit points, and level from a saved file.	int ldGame() int main()
ofstream	myGame	Used to save the Pokémon’s experience, hit points, and level to a file.	int savGame()

Program

```
/*
 * File:   main.cpp
 * Author: Connor Kelley
 * Created on May 6, 2015, 10:04 AM
 * Purpose: Create a functional game
 */

//System Libraries
#include <cstdlib>  //c standard
#include <iostream> //input output stream
#include <iomanip>  //input output manipulation
#include <ctime>    //c time
#include <fstream>  //file stream
using namespace std;

//User Libraries

//Global Constants

//Function Prototypes
void gameStr();
int ldGame(int, int, int);
void btlMenu();
void newGame(string);
void savGame(int, int, int);
int battle(int, int, int);
   //Return Experience Points attained
   //Return information about pokemon

//Execution Begins Here!
int main(int argc, char** argv) {
   //Declare Player Variables
   int     pmExp   = 0,  //Pokemon Experience
           pmHp    = 100,//Pokemon Hit points
           pmLvl   = 1;  //Pokemon Level
```

```
    string  name;   //Player Name
    //Other Variables
    int userSel;
    bool menu   = true,
         inGame = true;

    //Start Game
    gameStr();
    //Game Menu to load or start new game
    do{
        cout<<"********     MENU     *********"<<endl;
        cout<<"Enter 1 to load a previous game"<<endl;
        cout<<"Enter 2 to start a new game"<<endl;
        cin>>userSel;
        if (userSel == 1){
            ldGame(pmExp, pmHp, pmLvl);
            menu = false;
        } else if (userSel == 2){
            newGame(name);
            menu = false;
        } else {
            cout<<"You did not enter a valid menu selection"<<endl;
        }
    } while(menu);

    //Start the in-game menu...
    while(inGame){
    char choice;
    cout<<"What would you like to do?"<<endl;
    cout<<"[1.] Battle a Pokemon"<<endl;
    cout<<"[2.] Save the game"<<endl;
    cout<<"[3.] Exit the game"<<endl;
    cin>>choice;
    switch (choice){
        case '1':{
            battle(pmExp, pmHp, pmLvl);
            break;
        }
        case '2':{
            savGame(pmExp, pmHp, pmLvl);
            cout<<"Your game has saved!"<<endl;
            break;
        }
        case '3':{
            exit(0);
            inGame = false;
            break;
        }
    }
    }
    //Exit Stage Right!
    return 0;
}
```

```
//Function for Game start
void gameStr(){
   //Display starting content (TITLE SCREEN)
   cout<<"************************\n"
      <<"Pokemon by Connor Kelley\n"
      <<"  Press  [Enter]  to start \n"
      <<"************************\n";
   //Wait for the user to press 'Enter'
   cin.ignore();
}

//Function to Load Previous Game
int ldGame(int pmExp, int pmHp, int pmLvl){
   //Must load the name of the player
   ifstream inFile;
   inFile.open("savedGame.txt");
   inFile>>pmExp>>pmHp>>pmLvl;
   inFile.close();
   return pmExp, pmHp, pmLvl;
}

//Function to Create New Game
   //Introduction to game and game play
   //Player enters their name
void newGame(string name){
   //Opening Dialogue... Information about game play
   cout<<endl<<"********************************************\n"
            "Welcome to the wonderful game of pokemon!"<<endl;

   //Collect the name of the player
   cout<<"Start by entering your name: ";
   cin.ignore();
   getline(cin, name);
   cout<<endl<<"Awesome name, "<<name<<"!"<<endl;
   cout<<"Here is some information about pokemon.\n"
   //Eventually insert information about the starter Pokemon?
   //Would this be useful? Maybe some stats?
        "Over time your pokemon will grow stronger the more\n"
        "you successfully defeat other foes in battle. You will\n"
        "be able to [attack] your foe while in battle, and may\n"
        "acquire new attacks after you gather enough experience.\n\n"
        "Press [enter] to continue..."<<endl;
   cin.ignore();
   cout<<"You will face many foes on your journey. Strong foes with\n"
        "higher [hp] values will yield more [exp]erience for your pokemon.\n"
        "If your pokemon dies on the field of battle your pokemon will lose a level...\n\n"
        "Press [enter] to continue..."<<endl;
   cin.ignore();
   cout<<"Be careful not to face creatures too powerful to defeat.\n"
        "Remember, you can always [Run] at any time in battle. If you\n"
        "choose to [Run], you will not gain any experience for that fight.\n\n"
        "Press [enter] to continue..."<<endl;
   cin.ignore();
   cout<<endl<<name<<", you are now ready to become a Pokemon trainer\n"
         "and embark on your journey into the land of pokemon!"<<endl;
}

//Function to Save Previous Game
//Saves:
   //Name
   //Pokemon level
void savGame(int pmExp, int pmHp, int pmLvl){
   ofstream myGame;
   myGame.open("savedGame.txt");
   myGame<<pmExp<<pmHp<<pmLvl;
   myGame.close();
}

//Function to initiate battle sequence...
int battle(int pmExp, int pmHp, int pmLvl){
   //Initialize random number seed
   srand(static_cast<unsigned int>(time(0)));
   //Declare Variables
   int     fHp,    //Foe's HP
         fStrng, //Foe's Strength Value
         fLvl,   //Foe's Level
         pmStrng;//Pokemon Strength

   //Calculate the enemy's level,hit points
   if((pmLvl >= 1)&&(pmLvl <= 5)){
      fLvl = rand()%5+1;
      fHp  = (rand()%100+50)*(fLvl);
   } else if ((pmLvl >=6)&&(pmLvl <=10)){
      fLvl = rand()%10+5;
      fHp  = (rand()%200+1)*fLvl;
   }

   //Output Battle Sequence...
   cout<<endl<<"You've encountered a foe!"<<endl;
   //Output Enemy Stats!
   cout<<"Enemy level   : "<<fLvl<<endl;
   cout<<"Enemy HP      : "<<fHp<<endl;
   cout<<"Enemy Strength: "<<fStrng<<endl;
   do{
      char select;
      fStrng = rand()%10+1;
      pmStrng= rand()%10+1;
      cout<<"What would you like to do?"<<endl;
      cout<<"[1.] Attack"<<endl;
      cout<<"[2.] Run   "<<endl;
      cin>>select;
      switch (select){
         case '1':{
            //Attack the enemy!
            fHp -= pmStrng;
```

```
                cout<<"Success! You attack the enemy."<<endl;
                cout<<"You hit the enemy for "<<pmStrng<<" damage!"<<endl;
                cout<<"The enemy HP is now at: "<<fHp<<endl<<endl;
                cout<<"The enemy attacks you!"<<endl<<"You get hit for "<<fStrng<<" damage."<<endl;
                pmHp -= fStrng;
                cout<<"Your HP is now at: "<<pmHp<<endl;
                break;
            }
            case '2':{
                int randNum = rand()%10+1;
                if(randNum > 5){
                    cout<<"You ran away safely..."<<endl;
                    fHp = -1;
                } else {
                    cout<<"Oh no! You failed to run away!!"<<endl;
                    cout<<"The enemy attacks you! You get hit for "<<fStrng<<" damage."<<endl;
                    pmHp -= fStrng;
                    cout<<"Your HP is now at: "<<pmHp<<endl;
                }
                break;
            }
        }
    } while ((fHp > 0)&&(pmHp > 0));
    //Determine win or lose
    if(pmHp > 0){
        cout<<"You lost the battle. You lose a level!"<<endl;
        pmLvl--;
        cout<<"Your current level is now at "<<pmLvl<<endl;
    } else if (fHp > 0){
        cout<<"CONGRATS! YOU WON THE BATTLE!"<<endl;
        pmExp += rand()%100+75;
        cout<<"You gained "<<pmExp<<" for winning!"<<endl;
    }

    //Determine Level w/ experience
    if(pmExp >= 100){
        pmLvl++;
        pmHp += 100;
    }

    //Exit Stage Right!
    return pmExp, pmHp, pmLvl;
}
```