AP Computer Science Final Project - README Template

Instructions:
The first step in creating an excellent APCS final project is to write up a README. At this stage, this README file acts as your **project proposal**. Once you've filled in all components, Shelby will read through it and suggest edits. Ultimately, you need a document that adequately describes your project idea and **we must agree on this plan**.

Have one member of your group **make a copy of this Google Doc**. Then, they should share it with all other members **and with Mr. Shelby** so that every group member has edit permissions, and Shelby can add comments on your ideas.

There's a lot of parts of this document that you might not have full answers for yet. Because you haven't written the program yet, it's difficult to think about the **instructions** or **which group members will do which parts**. Even though this is hard to think about, you must have something in these sections that acts as your current plan. However, during the course of the project, you'll **continuously update this document**. This means that you will not be *held* to exactly what you put here - components of this document can change (and it's pretty common!).

There is one exception: the **Features List** section. Once Shelby OKs your README, the Features List section **cannot be modified**. For this reason, it is most important that you get a solid idea of what you want to make and the primary features it will have *now*.

Talk with your group. Consider drawing some pictures of what you think your project might look like. Be precise. When you're ready, fill this out together. Each component in brackets below ([these things]) should be replaced with your ideas. Note that there are several sample READMEs posted on this assignment for you to use as guidance.

--------------------**When README is finalized, remove everything above this line**--------------------

Ghost Golf

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Introduction:
Our program is a version of golf that involves other creative features in order to entice the user! The player can use their cursor to aim the golf ball toward the hole, and they can collect coins along the way if their ball hits a coin icon. The levels go up to the 6th level, and the game gets more difficult and interesting by the 3rd level. This is when the ghost icons come into play, making the game more intriguing. Overall, this is a fun game of skill that will make users want to continue playing! We wrote

this program because we wanted to create a more creative version of standard golf by using our imagination and creativity. In the beginning, we hoped that the final product would be something that hooks readers from the start and encourages them to continue playing with a competitive and sportive attitude. This game also provides great stress relief to working adults and students, because it takes their mind off their work. We started off wondering what game we should code for this project, but there were too many options, and many of them either turned out to be too simple or too difficult to create. We also wanted to create a game with our own twist so that it's original. After a lengthy period of deliberation and bouncing ideas off of each other, we thought of the game golf. This is when we decided to add the coin and ghost features in order to make the game more unique from other projects and more interesting as well. When playing the game, players are only allowed to shoot the ball by dragging their cursor to aim it, and their objective is to collect coins while avoiding ghosts, which appear in the third level and in all the levels after that. Players have a maximum of seven shots per level and if the limit is exceeded, they are sent back to level 1 to start over. Once the ghosts appear, they move randomly, and in five seconds the screen goes black. If the player hits a ghost in the dark, a pop-up appears asking them to decide whether they want to spend five coins to continue or start from the beginning. The objective of the game is to beat all six levels and collect as many coins as possible! This program's target market ranges to people of all ages as the game is enjoyable for everyone! Specifically, the program would be used by teens who are motivated to beat their old scores and get better at something. These people would want to use this program since it is a fun way to pass your time and strengthen your skills with online games. The program is very user-friendly, so it would be enjoyable for people who prefer online games! The main features of this program include aiming the ball using the cursor, collecting coins which are helpful later, avoiding ghosts, the six increasingly-difficult levels, and a button for zooming in and out in order to see the birds-eye view of the golf course in the level of the player is in.

Instructions:
When you open the program, you will see a pop-up window, which will allow you to start the game. There will be two buttons to click, one is to start the game at level one and the other one is the instructions on how to play the game and the objectives. Once the player starts, they will use the cursor to pull back the golf ball. They will then release the ball in a direction that will aid them in getting the ball to where the hole is located. By using the zoom in and out button located in the bottom right corner you can zoom in and out to view the entire golf course and find where the hole is. The player will have 7 chances to complete each level, and as the difficulty level increases, there will be more obstacles as well. As you progress through the game, at level three ghosts will start roaming around. After five seconds of entering level three, and all the levels beyond, the screen will go dark, so be sure to look and see where the ghosts are when the screen goes black. Your goal is to make the ball in the hole regardless of the ghosts around starting from level 3. If you happen to hit a ghost, you will be sent to level 1, but first, it will ask if you want to pay 5 coins to continue playing from the level you are at. While playing the game, aim for hitting coins while also getting the ball in the hole, because these coins can be used to set your personal high score for the game as well as save yourself if you hit a ghost in level three. If you get lost or confused at any point in the game, there will be a navigation bar at the top right so that you can refer back to the instructions.

<u>Features List (THE ONLY SECTION THAT CANNOT CHANGE LATER)</u>:

Must-have Features:
- The user can drag their cursor to aim the ball in the desired direction. When they pull the ball backward with their cursor, they will see a line in the direction the ball is going to go in, which will help them position the ball. Once they release the ball, by releasing their cursor, the ball will move in the desired direction and bounce off of any obstacles in its way, so it is crucial that the user aims the ball in the correct direction so it ends up close to the final hole.
- There are coin icons in random positions in the golf course, and when the ball hits the icon, the user will gain a coin, which will be counted and displayed on the side of the screen. Five coins are needed to continue if the player hits a ghost starting from the third level, so this is one of the uses for the coins. One of the objectives of the game is to gain as many coins as possible!
- There will be ghost icons starting from the third level. They will be floating around randomly, and the user must track the general direction it is moving in. This is because the screen will go dark after 5 seconds, and when the user shoots the ball, they can't hit a ghost. If they hit a ghost, a pop-up appears asking them to decide whether they want to spend five coins to continue or start from the beginning.
- There are six levels in total which all have several paths leading to an ultimate, final hole. If the ball gets extremely close to the hole or directly on top of the hole, it will "fall inside" and the player will move on to the next level. The six levels vary in difficulty, and the difficulty level grows as the player progresses.
- There is a zoom-in and zoom-out button in the bottom right corner of the screen. While playing the game, if the player wants to see the birds-eye view of the golf course in the level they are in, they can click on the button to zoom out. Once they click on it again, it will return to the previous state.

Want-to-have Features:
- A section where the player can use their coins to purchase new characters to play with (instead of the golf ball)
- A part on the top of the screen that keeps track of their points from previous levels (high score)
- Background music for when players are playing the game
- Screen effects that come up if players hit the ball in or lose a level
- Power-up icons to do special shots (night vision, hitting through a wall, hitting through a ghost, etc.)

Stretch Features:
- 3d version of the game where the user "walks through" the course
- Multiplayer version of the game which allows two users to play from the same or different devices
- The ball will shoot itself in the correct direction if the player reaches a certain number of coins

<u>Class List</u>:

Main
DrawingSurface
Level (abstract superclass)
LevelOne (subclass of Level)
LevelTwo (subclass of Level)
LevelThree (subclass of Level)
LevelFour (subclass of Level)
LevelFive (subclass of Level)
LevelSix (subclass of Level)
Ghost
Coin
GolfBall
HomeScreen
Instructions

Credits:
- Amulya Meduri - worked on Level superclass, LevelOne, LevelTwo, and Ghost
  - Amulya contributed to the project by keeping everyone on task and completing her part of the project in a timely manner.
- Sruthi Putcha - worked on DrawingSurface, LevelThree, LevelFour, Coin, and HomeScreen
  - Sruthi contributed by assigning work and making sure everyone was completing their work by the self deadlines we set for ourselves. She also completed her section of the project in a timely manner.
- Sreya Gudipati - worked on Main, LevelFive, LevelSix, GolfBall, and Instructions
  - Sreya created a schedule to keep us on task and to help us finish by the due date. She also completed her code in an efficient and effective manner.
- Outside sources:
  - We asked for the opinions of our family and friends to come up with the game idea
  - We got inspiration from previous games we played as well as the Apple Inc. created set of games - Game Pigeon
  - We used the online StackOverflow website to debug or difficult solve problems with our code
  - We used an online website for the coin, ghost, and ball icons
  - We used our Processing and Shapes libraries to import shapes and lines into the project