

# 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-----

## You Are It

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### Introduction:

Our program lets users play a game of tag which is a really popular outdoor game to play with friends but with a twist in it. You can choose between several different types of tag game modes like freeze tag, zombie tag, cops and robbers, etc. Our game was created to solve the lack of tactical and strategic based games in recent times. The game of tag involves a heavy use of strategy since you

have to decide where to run or the most effective way to tag someone. The rules of tag are dependent on the game mode you choose however there are some basic rules each mode has. There is a person who is the tagger and a group of people who are running away from the tagger and you want to not let them catch you or else you will be out of the game. Once you are tagged then your goal is to make sure no one wins by tagging the rest of the people. People who would want to use our program are people who love playing games which are not specifically shooter based and require thinking and also military strategists who are trying to find the optimal way of tagging their enemies based on their weapons and resources. The primary features of our game will include a menu screen, rules screen playable maps, different tag modes, networking and customization for your characters and obviously the actual game screen where you are playing the game. The game of tag has a "boundary" in which you play, which means that you are restricted to how far you can run around.

## **Instructions:**

### **The Setup:**

When you start the program you will see a menu screen where there are five choices. The button at the very top will be the play button. When you click on that, you can select the map you want to play in and also what tag mode you want to play. The next button will lead you to the character customization screen where you can change what your character looks like. The third button will lead you to the rules screen where it will explain how each tag mode works. The fourth button will be the settings button where you can choose to play on your laptop or join a server or host a server. The final button will be the credits button that will give credits to the creators. For the first through fifth button, when you want to go back to the menu, there will be a 'back' button at the bottom left corner.

### **Basic Gameplay:**

Once you start the game, the program will randomly assign one of you to be tagger and others as runners. You can control movement using WASD keys. The goal of the runner is to run away from the tagger and the goal of the tagger is to tag everybody before the time runs out. To tag a person you will need to have your character overlap with the runner character. To make the game require more strategy, the tagger will have a 5% speed advantage compared to the runners.

### **Rules of the Rounds:**

If the server has only two or three players, the game will be a best of 5 and whoever wins 3 matches first will win. (Note: if there are only two or three players, they will be limited to only normal tag mode and will not be able to play the other modes.) If there are four or more players, the number of rounds will be set to ten. If you want a custom number of rounds, you can adjust the number in the settings screen, otherwise the round numbers will be set as explained above. Each round will be the numberOfRunners minutes long. For example if there are 3 runners and 1 tagger, each round will be 3 minutes long. If there is only 1 runner and 1 tagger, then the game will be a minute long. Whichever runner is alive at the end of the round will be the winner(s) of that round. For the tagger to win, they must tag every runner before the time limit runs out. These scores will tally up to determine the final winner(s) of the game.

## **Features List (THE ONLY SECTION THAT CANNOT CHANGE LATER):**

### **Must-have Features:**

[These are features that we agree you will *definitely* have by the project due date. A good final project would have all of these completed. At least 5 are required. Each feature should be fully described (at least a few full sentences for each)]

- Different playable maps to play tag on including a special map features in all of the maps
  - A beach map where everyone's speed is slower.
  - Water park where it is slippery and it is harder to change directions because you keep sliding
- 3 different tag modes to have in our game
  - Normal Tag (At least 2 people) - Once someone gets tagged they get kicked out of the round. People who were tagged can still spectate the round but not play it. If not everyone is tagged by the time the time runs out then runners win else taggers win
    - Goal for tagger - Tag everyone before the time runs out
    - Goal for runner - Not to get tagged before time runs out.
  - Freeze Tag (At least 4 people) - If taggers tag someone they do not get kicked out of the game, instead they freeze. The other people can also unfreeze the person frozen if another runner is able to continuously touch them for 2 seconds. If everyone is frozen by the time the timer runs out then taggers win or if the taggers are able to freeze one person 3 different times then they win also. Else the runners win.
    - Goal for tagger - Tag everyone or tag one person three times
    - Goal for runner - Don't get tagged, save others
  - Cops and Robbers (At least 4 people) - At least 2 people will be cops/taggers and their goal is to defend the treasure and put the robbers/runners in jail by tagging them. Once a robber is tagged, they will be teleported to the jail which is at the center of the map and will not be able to move. Another robber can save a robber in jail by touching that robber. The goal of the robber is to try and touch the treasure located somewhere in the map and run back to their base without getting tagged. If the robber is tagged while carrying the treasure, the treasure will teleport back to its original location. To prevent the cops from blockading the treasure, there will be a small safe zone around the treasure. If the robbers successfully reach their base with the treasure, the game ends and the robbers win the game. If the time limit is up and the treasure is still not in the base or if all the robbers are tagged, the cops will win the game.
    - Goal for cops - Prevent the robbers from stealing the treasure by tagging them
    - Goal for robbers - Steal the treasure, save other robbers, don't get tagged
- Make the game of tagged be playable over a network to make the game multiplayer
- Make the menu screen for the game where you can choose your mode, number of people, and the map to play.

- Make a settings screen where you can adjust the number of rounds, taggers, and choose between WASD and arrow keys.
- Make a rule screen where you can learn about the rules of each mode
- Make a credits screen where you can see who created the game
- The abilities in each game which can change the tides of the game very quickly towards your specific teams. Each of these abilities spawn randomly throughout the course of the game. Each ability is one-time-use and the spawn will disappear the moment someone picks it up. There can only be a total of 4 abilities (same ability or different) at the same time on the map. These abilities activate the moment you touch them. Tagger-limited abilities can only be seen by taggers and runner-limited abilities can only be seen by runners.
  - Abilities which help the taggers
    - Glue Hands - Lets the taggers catch runners in a bigger radius. The tagger who gets this will have a small circular area that tags any runner in that domain. Both taggers and runners will be able to see this circle. Lasts for 7 seconds.
  - Abilities which help the runners
    - Sneaky cloak - Lets you be invisible to both runners and taggers for 5 seconds
  - Abilities both can pick up
    - Increased jump - Lets you jump 100% higher for a period of 7 seconds.
    - Super Slick - Gives you a 20% increase in speed for 7 seconds.

### **Want-to-have Features:**

[These are features that you would like to have by the project due date, but you're unsure whether you'll hit all of them. A good final project would have perhaps half of these completed. At least 5 are required. Again, fully describe each.]

- Characters to be able to perform combo moves once they reach a certain point throughout their game
- Add more maps
- Sound effects in the game to make it more intense and packed and make the ticking sound when the timer reaches the last 30 seconds.
- Animations for special effects which make the UI look more cleaner
- A way to collect rewards when you get wins and a battle pass where you can unlock skins
- Adding emotes in your game to express how you feel: happy, angry, sad
- Adding a way to save your progress so that you can progress in the battle pass

### **Stretch Features:**

[These are features that we agree a *fully complete version of this program would have, but that you probably will not have time to implement*. A good final project does not necessarily need to have any of these completed at all. At least 3 are required. Again, fully describe each.]

- 3D version which depicts how a real life game of tag would look like if you played it
- A chat system where people can chat and be toxic to each other once they win

- Allowing you to create your own maps to play on including adding special features to your map

### **Class List:**

[This section lists the Java classes that make up the program and very briefly describes what each represents. It's totally fine to put this section in list format and not to use full sentences.]

- GameModes - A superclass from which the other game modes extend from
  - CopsNRobbers - Extends GameModes
  - Freeze Modes - Extends GameModes
  - Normal Mode - Extends GameModes
- Maps - A superclass which creates the general skeleton structure of how each map will be like.
  - NormalMap - Extends from Map
- Player - Representing the player in the game
- Screens - Superclass from other screens extends
  - MenuScreen
  - PlayScreen1
  - RulesScreen
  - ScreenSwitcher
  - SettingScreen
- SpecialAbilities - Representing the general special abilities
  - DiveTag
  - HighJump
  - SneakyCloak
  - SpeedBoost
- System - Representing the driver class
  - DrawingSurface
  - Main

### **Credits:**

[Gives credit for project components. This includes both internal credit (your group members) and external credit (other people, websites, libraries). To do this:

- List the group members and describe how each member contributed to the completion of the final program. This could be classes written, art assets created, leadership/organizational skills exercises, or other tasks. Initially, this is *how you plan on splitting the work*.
- Give credit to all outside resources used. This includes downloaded images or sounds, external java libraries, parent/tutor/student coding help, etc.]

Inside Sources:

Noah:

- a) CopsNRobbers
- b) FreezeMode

- c) GameModes
- d) NormalMode
- e) Maps
- f) NormalMap
- g) Player
- h) MenuScreen
- i) PlayScreen1
- j) RulesScreen

Kartik -

- a) Screens
- b) ScreenSwitcher
- c) SettingScreen
- d) DiveTag
- e) HighJump
- f) SneakyCloak
- g) SpecialAbilities
- h) SpeedBoost
- i) DrawingSurface
- j) Main

Outside Sources:

- HHS Programming Club - Screens
- Shelby's Coding demo - Mario Screen Switcher