Phone Tag User Manual

1 INTRODUCTION

Welcome to Phone Tag! The information found in the following sections will address common features found within the Phone Tag app as well as proper hardware use. Our intent is that both beginning and advanced users will be able to use this manual for anything they want to know about the app. Technical details will be provided for those curious about software and hardware implementation, while simple step by step tutorials are available for users who are just getting started. Quick solutions to errors, troubleshooting, and customer support contacts can be found in the last section if users are encountering technical difficulties. We hope you find this guide helpful and detailed to your satisfaction.

1.1 Purpose and Scope

Within this user manual you will find information regarding:

- First time setup
- Hosting and joining matches
- How to play the game
- Hardware pairing
- Compatible mobile devices
- Creating gamemodes
- Creating and joining clans
- Geo-forts and resources
- Personal statistics
- User interface customization
- Customer support and troubleshooting

1.2 Organization

1. INTRODUCTION
   1.1. Purpose and Scope
   1.2. Organization
   1.3. Points of Contact
1.4. Project References

2. **SYSTEM CAPABILITIES**
   2.1. Purpose
   2.2. General Description

3. **DESCRIPTION OF SYSTEM FUNCTION**
   3.1. Hosting a match
      3.1.1. Steps for hosting a match
      3.1.2. Choosing a gamemode
      3.1.3. Inviting and kicking players
      3.1.4. Starting the match
      3.1.5. Results

   3.2. Joining a match
      3.2.1. Steps for joining a match
      3.2.2. Readying up
      3.2.3. Results

   3.3. Playing the game
      3.3.1. Orientation
      3.3.2. Shooting
      3.3.3. Respawning
      3.3.4. Objectives
      3.3.5. Results

   3.4. Hardware pairing
      3.4.1. Steps for pairing phone with hardware
      3.4.2. Results

   3.5. Creating Gamemodes
      3.5.1. Global Variables
      3.5.2. Game functions (objectives, icons, player interaction, etc.)
      3.5.3. Publishing and saving
      3.5.4. Results

   3.6. Creating a clan
      3.6.1. Steps for creating a clan
      3.6.2. Results

   3.7. Joining a clan
      3.7.1. Steps for joining a clan
3.7.2. Results

3.8. Clan functions
   3.8.1. Clan overview
   3.8.2. Geo-forts
   3.8.3. Missions
   3.8.4. Research
   3.8.5. Resources
   3.8.6. Members
   3.8.7. Chat
   3.8.8. Clan information
   3.8.9. Admin options
   3.8.10. Member options
   3.8.11. Results

3.9. Statistics
   3.9.1. Steps to access your statistics
   3.9.2. Results

3.10. User interface customization
   3.10.1. Customization options
   3.10.2. Results

4. Installing and Maintaining the App
   4.1. Installation
   4.2. System updates

5. Troubleshooting and Errors
   5.1. Unexpected shutdowns or loss of connection during play
   5.2. Error Messages
   5.3. Customer support

1.3 Points of Contact

Technical support is available around the clock for all users regardless of location. We believe communication is important between developers and users and have implemented multiple mediums of communication for those who have questions or suggestions. Feel free to reach out to us via email, social media, phone, mail, forums, or stop by our office! Our highly trained staff is based out of the United States, but we have linguists who specialize in all major languages for users who have English as a second language. General contact
information details can be found below. To contact customer service, navigate to section 5.3 under “support”.

Email: contact@phonetag.net  
Facebook: https://facebook.com/phonetag  
Twitter: https://twitter.com/phonetag  
Phone: 1-800-4PEWPEW (1-800-473-9739), extension 42  
Mail and Office Address: 1337 Leet Lane Fairbanks, Alaska, 99701  
Forums: https://www.phonetag.net/forums

1.4 Project References

All project references can be found on our wiki page at: https://www.phonetag.net/wiki  
Specific prior works include:

- Brainstorming  
  - Project introduction  
  - Group passing  
  - Post-up  
  - Affinity diagram  
  - Bull’s eye diagram  
  - Forced ranking

- Contextual Design  
  - Goals  
  - Problem/Solution  
  - Visioning  
  - Interviews

- Value Sensitive Design  
  - Our Approach  
  - Pervasiveness
- Stakeholders
- Time
- Values

- Task Analysis
  - User personas and general scenarios
  - Task structure diagram
  - Tasks and storyboards
    - Create Gamemode
    - Statistics
    - Laser Tag
    - Clans
    - Hosting and joining games

- White paper
- System overview
- Digital interactive prototype (DIP)

### 1.5 Primary Business Functions

The main function of Phone Tag is to entertain users by offering a gaming platform that combines the benefits of video games and physical activities into one. We believe this pseudo gaming approach will introduce a unique gaming medium that both indoor and outdoor gamers can enjoy and play together. Users will find that Phone Tag prizes user interaction and convenience over anything else; tedious activities involving coordination and space availability are automated by the matchmaking system to reduce heartache and maximize game time. Users will also have the liberty to customize whatever they want on the UI and hardware via attachments, all the while progressing towards a persistent goal via in app missions. Collectively, we intend these features to form the foundation to an addicting, original gaming platform that promotes healthy physical activity to the gaming community.
1.6 Glossary

UI - The primary interface users of the system interact with. This includes the in game map, weapon ammo, chat channels, etc.

P2P - (Peer-To-Peer) We chose to not use this networking scheme because it is very dependant on having perfect network communication between all devices because each device is a host responsible for connections to every other device. With the client server approach that we implemented, one bad player will not lag the game and battery life is preserved on non-host players since they only have to worry about connections with the server rather than connections with each device in the game. Client-server also makes kicking players from a game and packet distribution easy and uniform.

P2P image:
http://3.bp.blogspot.com/-MlkFMAWDZ8s/TcEfyKnAXWI/AAAAAAAAABk/9ddo6AToWJI/s1600/P2P_peer-to_peer.png

Client-Server image:

Lag - A hinderance in network traffic that causes the client to receive network packets slower than other clients on the network. This causes delays in event detection in game.
2 SYSTEM CAPABILITIES

Phone Tag enables its users to quickly engage in phone based laser tag with both friends and strangers. The app assists in coordinating matches, creating new game modes, and banding together as clans.

2.1 Purpose

The purpose of phone tag is to enable users to play phone based laser tag quickly and easily.

2.2 General Description

With the Phone Tag app, you can quickly host and play a laser tag game locally with both friends and strangers using an internet connection. List of features includes:

1. Matchmaking
   a. Game Hosting
   b. Joining local games

2. Gamemode creation
   a. Share gamemodes with friends

3. Clan management
   a. Find a clan
   b. Create a clan

4. In-game display
   a. In-game minimap
   b. Weapon display
   c. Ammo tracker

5. Statistics
   a. Global
   b. local
3 DESCRIPTION OF SYSTEM FUNCTIONS

Step-by-step instructions to common and advanced system functions can be found in this section. Users are expected to have downloaded the Phone Tag app and have the main menu open. Gun hardware (of any type) is required for the hardware pairing section and playing the game section.

- Hosting a match
  The following steps go over how to host or create a game. The first five steps are essential to continue with the section proceeding it. Keep in mind that hosting a game will drain your phone battery faster than the people who join your game. This is because you will act as a central server that everyone connects to to receive data about the match. We chose to use this network design since it is superior to a peer-to-peer (P2P) connection system. For more details on this design choice, see the glossary section (1.6).

  1. Steps for hosting a match
     1. Navigate to Matchmaking from the main menu.
     2. Select Create Game.
     3. Tap the Name of Game text box to give your game a name for players to identify your match by.
     4. Select Public if you want the match to be visible to all players within a certain proximity.
     5. Select Private if you want to make the match exclusive for specific users. If you select this option, you will be prompted with a menu to invite players to your game. Simply input each player’s username into the text box and tap Invite.

  2. Choosing a gamemode
     1. Tap the Select Game Mode section.
     2. Tap the gamemode you would like the play.

  Note: these gamemodes are divided into two section. The Default Gamemodes section includes standard gamemodes that are installed on every phone tag app. The User Created Gamemodes section holds gamemodes you downloaded from the forums and gamemodes you have created.

  3. Inviting and kicking players
1. Open the options menu by tapping the icon in the top right corner of the Create Game screen.
2. Select Invite.
3. Type in the username of the user you wish to invite.
4. Press invite.
   - Result: the user will be notified on their app or via push notification to accept or decline your invitation.
   - Starting the match
     1. Ensure every player has a green check by their name indicating they have readied up.
     2. Tap Create Game.
   - Results
     You should see the In Game Display and a countdown timer that indicates when the match will officially begin.

- Joining a match
  Before you join a match, make sure your interface is customized to your liking and you have all attachments installed on your hardware. Phone Tag does not allow users to change these features once they have loaded into game. After you are satisfied with the items above, following the steps below to join a game.
  - Steps for joining a match
    1. Navigate to Matchmaking from the main menu.
    2. Tap the Join Game button.
    3. Select a game from the Select Game window. Games with an open lock indicate public games while games with a closed lock indicate games that are private and require an invite to be joined. Games will appear green in the Select Game window to indicate they are selected.
       - Note: To filter games, tap the filter drop down menu located at the top right corner of the Select Game window. From the choices listed, select the prefered order you would like the available games sorted in. After selection, you should see the available games ordered according to your selection.
    4. Tap the join game button

- Readying up
  At this point you should be in the game lobby you selected.
  1. Tap the check next to your username to indicate you are ready to play. The host cannot start the game until all players have done this so don’t forget to ready up!

- Results
  Once all the players have readied up, it is up to the host to start the game. Once this has been done, you should see the In Game Display window and a
countdown timer indicating the when the match will officially begin. Use this time
to discuss strategy with your team, coordinate positioning, and move to the team
starting areas on the battlefield.

• Playing the game
This section covers the combat basics players must know in order to be effective on the
battlefield. Sub categories in this section will be described differently than other section
and will have a hybrid of step-by-step instructions alongside descriptions of the activity.

  ▪ Orientation
Orientation refers to how you view yourself, objectives, and other players on the
In Game Display map. By default, when you begin a match you should see a grid
with blue dots, a pistol icon, and a bar graph icon.

    1. Grid Basics
    • The white arrow in the middle of your screen is your location on
      the grid.
    • Blue dots represent your teammate's locations relative to you.
    • You can notify your teammates of locations of interest (ex. an
      enemy's position or an objective) by double tapping the
      approximate location on the grid. This will create a blinking red dot
      on their grids at the location you chose.
    • Double tapping then dragging your finger across the grid will draw
      a line on you and your allies' grids. This can be helpful when you
      want to tell someone to move to a new location from a distance.

    2. Pistol Icon
    • Tapping the pistol icon will bring up a semi-transparent window
      displaying the name of your weapon, how much ammo is in your
      clip, how much ammo you have, and your weapon's effective
      range.

    3. Bar Graph Icon
    • Tapping the bar graph icon will bring up a semi-transparent
      window displaying detailed information about each player in the
      game. In general, you will be able to see the amount of kills,
      deaths, and assists each player has. In special gamemodes like
      capture the flag, the players who have possession of the flag will
      have a special flag icon next to their names.

    4. Score
    • The bottom of the In Game Display displays a simple, color coded
      representation of the match score.

  ▪ Shooting
    1. Center your weapon's sights on the target you wish to hit
2. Consider the effective range of your weapon, if your target is within this range, squeeze the trigger to fire a shot otherwise, move closer to your target then take the shot.
   - Tip: Different weapons have different rates of fire and effective ranges. Orient your positioning based on these specifications to maximize your weapon’s effectiveness.
3. To reload your weapon, tap the cartridge or magazine on your weapon.
   - Note: This action will disable your weapon for a few seconds to simulate a reload
   ○ Respawning
     1. If you have been killed, your weapon will be disabled and a skull will appear in the middle of your In Game Display.
     2. To respawn, you must walk or run back to the location your team started at the beginning of the match.
     3. Once the app registers you are within spawn boundaries, the skull will disappear and your weapon will be enabled.
   ○ Objectives
     1. To interact with objectives, simply move to the location of the objective on the map. Depending on the objective properties, (i.e king of the hill or capture the flag) you will either begin capturing or obtain possession of it.

- Hardware pairing
  When you purchase a new weapon or want to switch to a different one you must pair it with your device. This allows the two components to communicate between each other and other players in the game.
  ○ Steps for pairing phone with hardware
    1. Turn on your phone’s Bluetooth setting.
2. Tap the pair button on the weapon.

3. Select the weapon from the Bluetooth menu on your phone.
4. Open up the Phone Tag app.

○ Results
You should see a dialog box pop up on your screen notifying you that your <weapon name> has been paired successfully. This indicates a successful pairing and allows you to use weapons in game.

● Creating Gamemodes
For those interested in creating their own custom gamemode, Phone Tag provides you with a built in gamemode editor that uses a combination of shapes, icons, and variables to customize game functionality. Most of this process is drag and drop picture based so no programming experience is required.

○ Steps for Creating a Gamemode
1. Navigate to Create Gamemode from the main menu
2. Edit variables and drag and drop icons to create your gamemode
   ● Details for this step are described below
3. Select the options menu in the top right corner of the app
4. Choose to make a new gamemode (start from scratch) load a new gamemode (revisit previous work) or save.
5. Selecting save will open a prompt asking you if you want to publish online. Saying yes to this will post your gamemode to a public forum and open the forums page.

○ Global Variables
These customization options can be used to set numeric and boolean based variables such as the score or points to win. They are located at the very top of the Create Gamemode window. Details about the variables can be found below.

- **Lobby Size**: The maximum amount of players allowed in the game
- **Power Ups**: Setting this variable to T (true) will enable power ups on the map, setting it to F (false) will disable power ups.
- **Time Limit**: The amount of time in minutes a game lasts
- **Points**: The value a team must reach to win the game
- **Rounds**: The number of games played in one instance
- **Scale**: Adjusts the size of the map

○ Game functions
Game functions are locations that players interact with when they are within range. Information about each icon is displayed when they are selected in the Create Gamemode window.

![Left Icon Panel](image)

- (From top to bottom)
- **Power Up**: Gives player a temporary advantage over others.
- **Spawn Point**: The location players start the game and respawn at.
- **Turn in Point**: Area where players have to bring an objective such as a flag to get points for their team.
- **Custom Objective**: An objective that can be coded to perform events specific to custom gamemodes (advanced users only - technical knowledge required).

### Right Icon Panel
- (From top to bottom)
- **Resource**: A randomly timed node that respawns every x seconds. Retrieving it adds points to your team score.
- **Information Node**: Displays a custom notification to the player.
- **Flag**: Sets the spawn location of a team’s flag for capture the flag related gamemodes.
- **Hill**: Sets the hill location(s) in king of the hill related gamemodes.

- Creating a clan
  - Steps for creating a clan
    1. Navigate to Clan from the main menu
    2. Select Create New Clan
    3. Input the name of your clan, home base, and a logo for your clan (optional)
    4. Press Submit
    5. Input the usernames of the three founding member of your clan into the corresponding text boxes.
      - Three members are required to prevent excess clan creation spam with small member populations.
    6. Press Submit
o** Results**
Your clan has been created and can be viewed by the public. People who are interested can request entry or you can invite members by username. Information on clan features can be found in the section below.

- **Joining a clan**
  - **Steps for joining a clan**
    1. Navigate to Clan from the main menu.
    2. Select Find a Clan.
    3. Use the search bar to lookup a specific clan or select a clan from the suggestions window.
    4. Press Submit Request for Entry.
    5. Wait for response from clan leader.

- **Results**
  If the clan leader accepts your request, you will become a member of the clan and have information the clan functions described below. If the clan leader rejects your request, you can either try again (up to three times a day) or find another clan to join.

- **Clan functions**
  This section describes everything you can do within the Clan window.

  - **Clan overview**
    Clan overview displays a quick event log that informs you about recent achievements and general progression.

  - **Forts**
    The forts tab displays all clan owned forts and their lat and long coordinates. Forts are central clan operation strongholds positioned at physical locations on the world map. One of the main goals for a clan is to build a fort with resources they collect from matches. This is an expensive endeavour, but once built, they provide members with special bonuses and automated resource gaining. However, clans must defend these forts from other clans or risk it being captured and raided for resources. As a preventative measure, clan leaders can choose to invest and research defensive technology to make raids less successful.

  - **Missions**
    The missions tab shows quests you can assist the clan in completing to gain resources, forts, and ranking. This tab also notifies you if one of your forts is under attack and needs defending.
○ Research
The Research tab harbors all the various upgrades clans can unlock to improve weaponry and their forts. Upgrades are sequential, meaning clan must unlock prior technology in order to gain access to new research options. Researching weapon and fort upgrades consumes resources depending on the tier of research. High research tiers consume large amounts of resources and low research tiers consume less. This progression system offers goal persistence and encourages clans to expand their member bases to accelerate resource gain.

○ The following sections are located under the more tab at the bottom right of the Clan window.
○ Resources
The resources menu displays the quantity and type of all clan owned resources.

○ Members
The members menu shows usernames, rankings, and the amount of time each member has been involved with the clan.

○ Chat
The chat menu is a general instant messaging location where members can talk amongst themselves.

○ Clan information
Specific information about the clan can be viewed in this menu. This includes the clan level, largest fort, number of member, and various statistical information.

○ Admin options
Application acceptance, post battle results, and clan challenge settings are accessed through the admin options menu, but only admins can initiate changes. There is also a handy global post feature that sends urgent information to all members of the clan.

○ Member options
All members have access to the member options menu which allows people to adjust privacy and notification settings. If a member decide to leave the clan, the button to do so is located here as well.

● Statistics
○ Steps to access your statistics
  1. Navigate to Statistic from the main menu
• By default you should see your personal kills, deaths, assists, KDA, matches won, matches lost, favorite weapon, and accuracy percentage.

2. Press the Global button to view how your clan compares to the global average in kills/game, deaths/game, assists/game, KDA/game, and win/loss ratio.

• User interface customization
  ○ Steps for customizing your user interface
    1. Navigate to In Game Display from the main menu
    2. Select different icons in the display to change location, size, orientation, and color.
    3. Tap the options menu in the top right corner to add advanced features to your interface. Advanced features include things like noise panning which allows users with headphones to hear where shots came from. You can also take data displays from the gun or bar graph icon and place them directly onto your interface. You may find this convenient if you want to have quick access to specific weapon or game information.

  ○ Results
    All changes are saved when you hit the back button. Next time you load into a game your most recent interface will be used.

4 Installing and Maintaining the App

4.1 Installation

1. Install the PhoneTag app from Google Play or the Apple App Store.

   ![App Store](image)

2. When running the app for the first time, you will be asked to create your PhoneTag account by providing a user name, password, and valid email address.

   Ensure you have a reliable, secure internet connection through WiFi or your cellular network before starting the app for the first time

3. Once this is complete, you will find yourself at the main menu (see section 3 for instructions after that point)
4.2 System Updates

Occasionally, Phonetag will release an update to the app to fix bugs, add features, and keep the game balanced, or will need to bring down servers for maintenance. All online users will receive a notification 1 hour before, and again 30 minutes before, and again 10 minutes before, one of these events occurs. Once servers go down or an app update is released, users will be unable to access their clans or begin games until the servers are brought back up and users have installed any app updates. If you are in a game when the servers go down or a patch is released, you may finish the game and still have your statistics recorded and earn Clan resources, however the app will notify you and shut down immediately after the game ends.

_All scheduled maintenance times can be found online at:_

HTTPS://WWW.PHONETAG.NET/Maintenance

5 Troubleshooting and Errors

5.1 Unexpected Shutdown or Loss of Connection During Play

If the app detects an unexpected shutdown or loss of connection during a game, there is a 5-minute window of time during which you may restart the app or reconnect and attempt to rejoin the game in progress. Any statistics or rewards earned during the game before the loss of connection will be preserved and you may continue playing. If the app does not prompt you to reconnect to the game, then you may only rejoin if the host allows players to join the game in progress, and your statistics for that game will be reset. If you are unable to
reconnect to a game, all statistics and rewards up to the point connection was lost will be saved, provided the rewards did not depend on the outcome of the match.

5.2 Error Messages

- **“Unable to join: Host permissions do not allow you to join this match”**
  This error will display if the host of a match has somehow restricted you from joining their match. This can happen in a variety of ways:
  - You were banned or kicked from the match by the host
  - The host has restricted who may join their match to friends or clanmates only, or is using a whitelist

- **“Connection Error. Errno: [############]”**
  This error displays when some failure has occurred sending data between the app and the Phonetag servers. To troubleshoot, Ensure the following:
  - That your device has a reliable connection to the internet
  - That no security features on your device are blocking connections to or from the app
  - That you aren’t straying into an area which would interfere with radio signals, especially while playing (for example, inside a lead box, Tesla coil, or Faraday cage)

If the error persists after following the steps above, contact support with the error number. If the error only occurs under certain conditions, keep those in mind as well.

- **“Hardware error. Errno: [############]”**
  This occurs when a Phonetag attachment fails to communicate with your device, or notifies the device that something is wrong. Should you encounter this error, begin by performing the following troubleshooting steps depending on the error number:

  **If the error number is less than 500 (hardware connection error):**
  1) Re-pair all phontag equipment with your device. (see 3.4.1)
  2) Turn off other Bluetooth devices connected to your device.
  3) Ensure that, during use, the Phonetag equipment is staying within range of your device and that nothing on your person or in your immediate vicinity could be interfering with the Bluetooth signal.
  4) Ensure that your device’s Bluetooth antenna is functioning correctly, testing it with another Bluetooth device if possible. (if the test fails, the problem may be with your device, and not your Phonetag equipment).
If the error number is greater than 500 (hardware issue):
1) Ensure your Phonetag equipment has been charged and is powered on.
2) If it was on, power it off and back on again.
3) Inspect your Phonetag equipment for damage or foreign material, taking particular care to ensure that all transmitters, receivers, and openings are clean and undamaged.

If the error persists after following the steps above, contact support with the error number. If the error only occurs under certain conditions, keep those in mind as well.

- **“Cannot establish GPS connections”**
  If this error occurs, you should first ensure that your device is allowing the Phonetag app to access its location (GPS) data. If so, then chances are something about your environment or location is not conducive to using GPS.

*The U.S. National Park Service has published some helpful tips for getting a good gps signal at [https://www.nps.gov](https://www.nps.gov)*

### 5.3 Customer Support

You can message customer support from within the app by pressing the options button in the top-right corner of the app screen and selecting ‘help’.

Customer support is also available online at [https://www.phonetag.net/support](https://www.phonetag.net/support)

Or by phone, 24/7 at 1-800-4PEWPEW (1-800-473-9739)