Server communication protocol

Sent as a byte array

1. When client first connects, server will check client version with server version:

Server will send this packet to client for version check:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible Values |
| 0 | Server commandID | 253 |
| 1 | Version Major | If version number is 1.0, this is 1 |
| 2 | Version Minor | If version number is 1.0, this is 0 |
| 5-19 | Padding | 0 |

Client will then send this message back to confirm version match:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible Values |
| 0 | client commandID | 253 |
| 1 | Version match | 0 = version mismatch  1 = version match |
| 2-19 | Padding | 0 |

1. When the first client is connected with the correct version, the server will send this message to notify the client that they are the admin:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible Values |
| 0 | Server commandID | 0 |
| 1 | GunID | Number from 1-16, needs to be passed to gun through Bluetooth |
| 2-19 | Padding | 0 |

After the first client connects, all other clients will be sent this to notify them that they are regular players:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible Values |
| 0 | Server commandID | 1 |
| 1 | GunID | Number from 1-16, needs to be passed to gun through Bluetooth |
| 2-19 | Padding | 0 |

Admin will then go to admin set up page, while clients will go to player waiting page. When admin is done with admin set up, they will send this message to server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible Values |
| 0 | Client commandID | 0 |
| 1 | Teams or FFA | If 0, the FFA, if 2-8, then teams. Cannot be 1 |
| 2 | Ammo | Up to 255. If 0, then unlimited |
| 3 | Lives or unlimited respawn | Up to 255. If 0, then unlimited respawn |
| 4 | Time limit | Up to 255, in minutes. If 0, then unlimited time. Both kill limit and time limit cannot be 0, managed by app. |
| 5 | Score limit | Up to 255. If 0, then unlimited score. Both score limit and time limit cannot be 0, managed by app. |
| 6 | Location | 0 = indoor  1 = outdoor |
| 7 | Game Type | 0 = TDM or FFA  1 = Odd ball |
| 6-19 | Padding | 0 |

1. After server setup is complete, all server will send a 20 byte message to tell all clients to go to player set up page, as well as give game information:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Server commandID | 2 |
| 1 | Teams or FFA | If 0, then FFA, if is 1-7, then +1 = number of teams |
| 2 | Ammo | Up to 255. If 0, then unlimited |
| 3 | Lives or unlimited respawn | Up to 255. If 0, then unlimited respawn |
| 4 | Time limit | Up to 255, in minutes. If 0, then unlimited time. Both kill limit and time limit cannot be 0, managed by app. |
| 5 | score limit | Up to 255. If 0, then unlimited score. Both score limit and time limit cannot be 0, managed by app. |
| 6 | Location | 0 = Indoor  1 = Outdoor |
| 7 | Game Type | 0 = FFA or TDM  1 = Oddball |
| 6-19 | Padding | 0 |

All clients will then go to a page to select their username (10 characters), team (if not FFA), and gun type. Once the player hits the ready button, it will be sent to the server in this packet:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 1 |
| 1-10 | Username | ASCII |
| 11 | Team # | 0 if FFA. Otherwise, depending on game information received, can be from 1-8. |
| 12 | Gun type | 0 for plasma, 1 for burst, 2 for full auto, 3 for single shot |
| 13 | Kills | Kills this player has made. To make joining mid-game possible |
| 14 | Deaths | Deaths this player has made. To make joining mid-game possible |
| 15 | Score | Score the player has reached. Only used if the gametype something other than TDM or FFA |
| 15-19 | Padding | 0 |

The server will send this packet to all clients to inform them of a new player being created:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 1 |
| 1-10 | Username | ASCII |
| 11 | Team # | 0 if FFA. Otherwise, depending on game information received, can be from 1-8. |
| 12 | Gun type | 0 for plasma, 1 for burst, 2 for full auto, 3 for single shot |
| 13 | GunID | GunID |
| 14 | Kills | Kills this player has made. To make joining mid-game possible |
| 15 | Deaths | Deaths this player has made. To make joining mid-game possible |
| 16 | Score | Score the player has reached. Only used if the gametype something other than TDM or FFA |
| 16-19 | Padding | 0 |

1. Players will then be sent to a lobby page. The will wait for the admin to press the start button. Once the start button has been pressed, this packet will be sent by the admin to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 2 |
| 1-19 | Padding | 0 |

Server will then send this packet to all clients to start the game:

|  |  |  |
| --- | --- | --- |
| 0 | server commandID | 5 |
| 1-19 | Padding | 0 |

After game has started, server will refuse connections from future clients. Players will be unable to change settings.

1. During the game, if a player is hit by an enemy player, they will send this message to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 3 |
| 1 | Client Shooting gunID | 1-16 |
| 2 | Client hit gunID | 1-16 |
| 3-19 | Padding | 0 |

This will not send if the player was hit by a friendly.

The server will then send this packet to all clients, informing them of the event:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 6 |
| 1 | Client Shooting gunID | 1-16 |
| 2 | Client hit gunID | 1-16 |
| 3-19 | Padding | 0 |

1. If a player dies, they will send this packet to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 4 |
| 1 | Client Shooting gunID | 1-16 |
| 2 | Client killed gunID | 1-16 |
| 3-19 | Padding | 0 |

The server will send this message to all other clients to inform them of the event:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | server commandID | 7 |
| 1 | Client Shooting gunID | 1-16 |
| 2 | Client killed gunID | 1-16 |
| 3-19 | Padding | 0 |

All clients will record a death for the player killed and a kill for the player shooting, as will the server.

1. Every 10 seconds, the admin will send a message to the server containing how many seconds the admin admin has remaining, to sync all clients (This will only happen if the game is timed)

The amount of seconds will be divided over 2 bytes, byte 1 for how many times 255 can be multiplied into the number, and nyte 2 for the remainder

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 6 |
| 1 | Coefficient | 0-60 |
| 2 | Remainder | 255 |
| 3-19 | Padding | 0 |

To find total number of seconds: (255\*coefficient) + remainder

The server will then send this message to all clients other than the admin:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | server commandID | 9 |
| 1 | 255\*possible value | 0-60 |
| 2 | Remainder | 255 |
| 3-19 | Padding | 0 |

1. When a player first gets the oddball, this packet will be sent to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 7 |
| 1 | Player with oddball gunID | GunID 1-16 |
| 3-19 | Padding | 0 |

The server will then send this to all clients:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Server commandID | 10 |
| 1 | Player with oddball gunID | GunID 1-16 |
| 3-19 | Padding | 0 |

1. Whenever a player loses the oddball, this packet will be sent to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 8 |
| 1 | Player oddball lost gunID | GunID 1-16 |
| 3-19 | Padding | 0 |

The server will then send this to all clients:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Server commandID | 11 |
| 1 | Player oddball lost gunID | GunID 1-16 |
| 3-19 | Padding | 0 |

1. When a player’s score increases, this packet will be sent to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 9 |
| 1 | Player score increase gunID | GunID 1-16 |
| 3-19 | Padding | 0 |

The server will then send this to all clients:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Server commandID | 12 |
| 1 | Player score increase gunID | GunID 1-16 |
| 3-19 | Padding | 0 |

1. If the game ends by players reaching the kill limit or time limit, the admin will send this message to the server:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Client commandID | 5 |
| 1-19 | Padding | 0 |

The server will then send this message to all clients to end the game:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | server commandID | 8 |
| 1-19 | Padding | 0 |

If a player disconnects, forcibly or otherwise, the server will send a message to all clients to remove that player off their lists:

|  |  |  |
| --- | --- | --- |
| Byte# | Purpose | Possible values |
| 0 | Server commandID | 4 |
| 1 | Disconnected player’s gunID | 1-16 |
| 2-19 | Padding | 0 |

Possible client commandIDs:

|  |  |
| --- | --- |
| Byte 0 value | Purpose |
| 0 | Admin set up |
| 1 | Client set up |
| 2 | Start game |
| 3 | Player hit |
| 4 | Player died |
| 5 | Game end |
| 6 | Time sync |
| 7 | Oddball received |
| 8 | Oddball lost |
| 9 | Score increase |
| 253 | Version check |
| 254 | Restart Server |
| 255 | Disconnect from server |

Possible server commandIDs

|  |  |
| --- | --- |
| Byte 0 value | Purpose |
| 0 | To tell the client that it is the admin |
| 1 | To tell a non-admin client to go to waiting page |
| 2 | To tell all clients to go to first time set up and give game information |
| 3 | Gives client info about players |
| 4 | Player has disconnected from server; Delete player from client lists |
| 5 | Tell client to start game |
| 6 | To tell all clients that a player was hit |
| 7 | To tell all clients that a player was killed |
| 8 | Game end |
| 9 | Time sync |
| 10 | Oddball received |
| 11 | Oddball lost |
| 12 | Score increase |
| 253 | Version check |
| 254 | Restart client |
| 255 | Disconnect client |