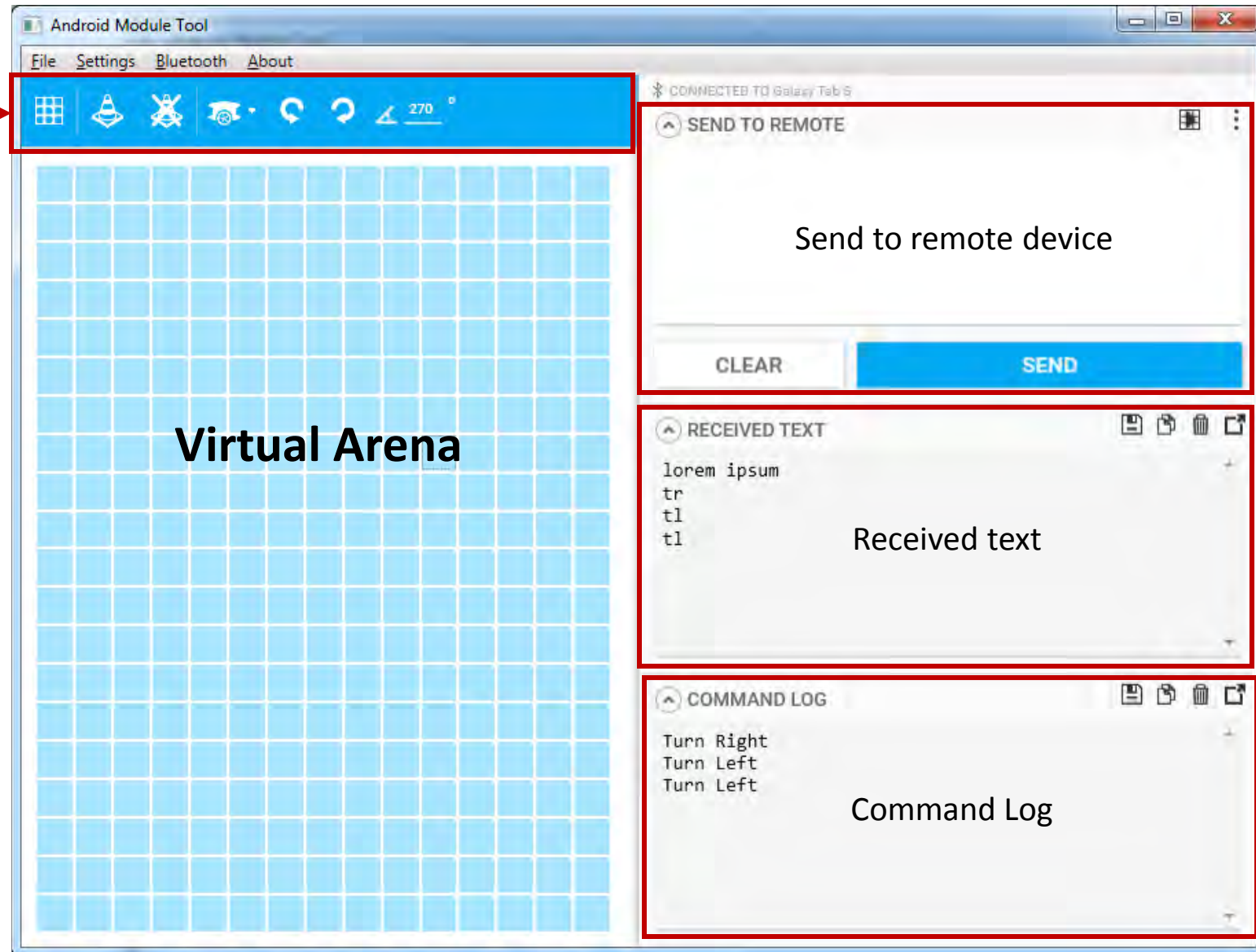


Main Interface Components

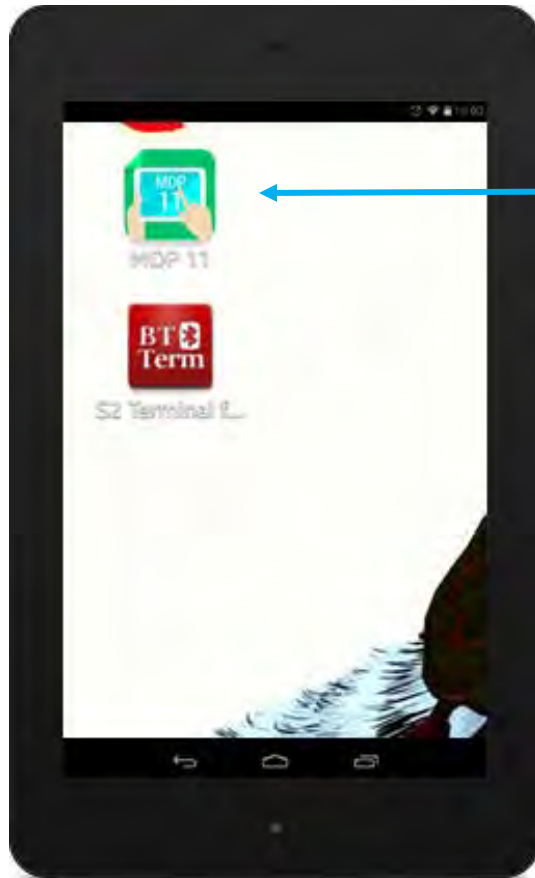
Virtual Arena tools



Connect to Bluetooth Device (As client)

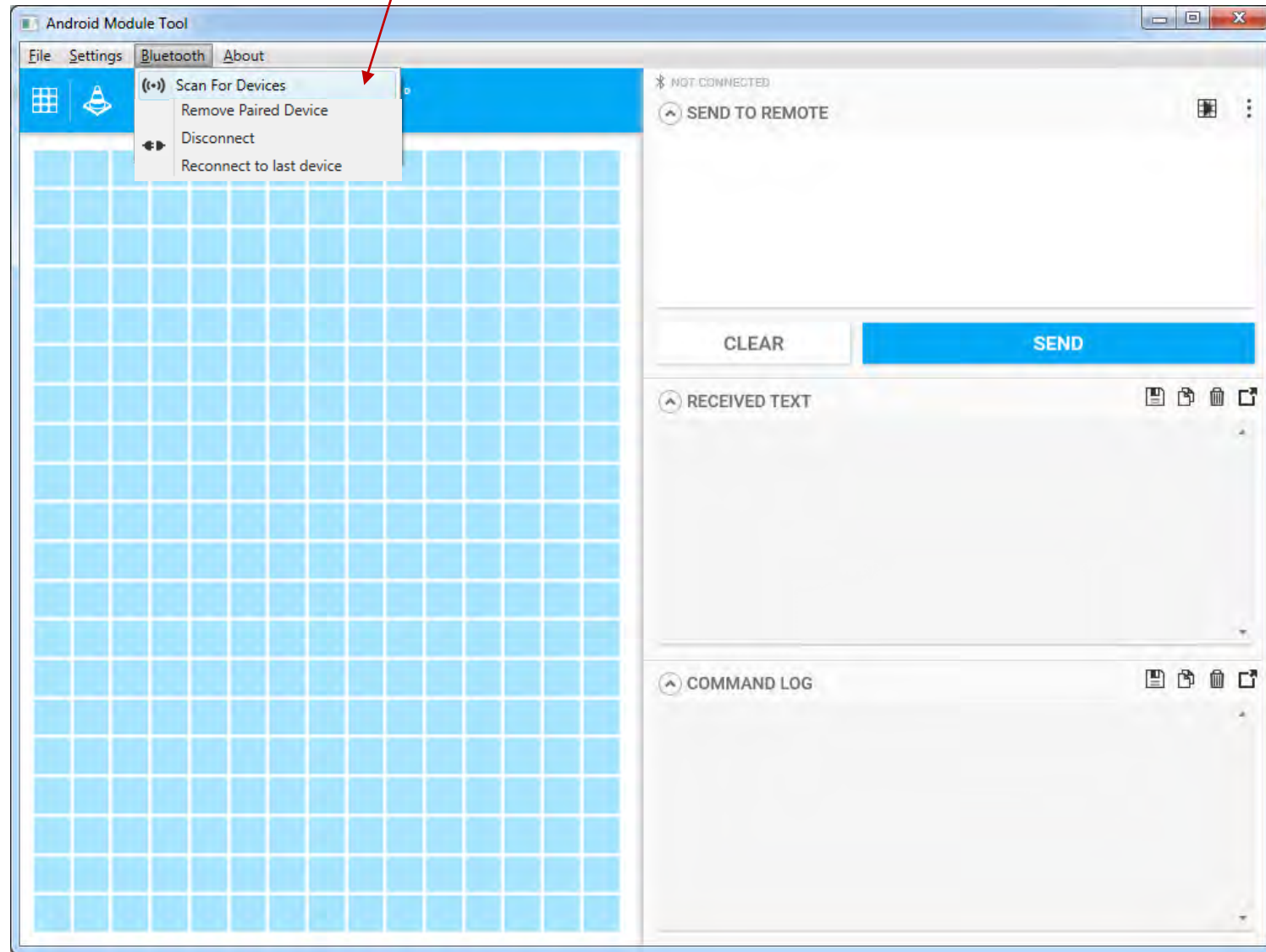
Open the app on your device first.

Alternatively, you can open the “S2 terminal for Bluetooth” Bluetooth terminal emulator program that can be downloaded from the Play Store

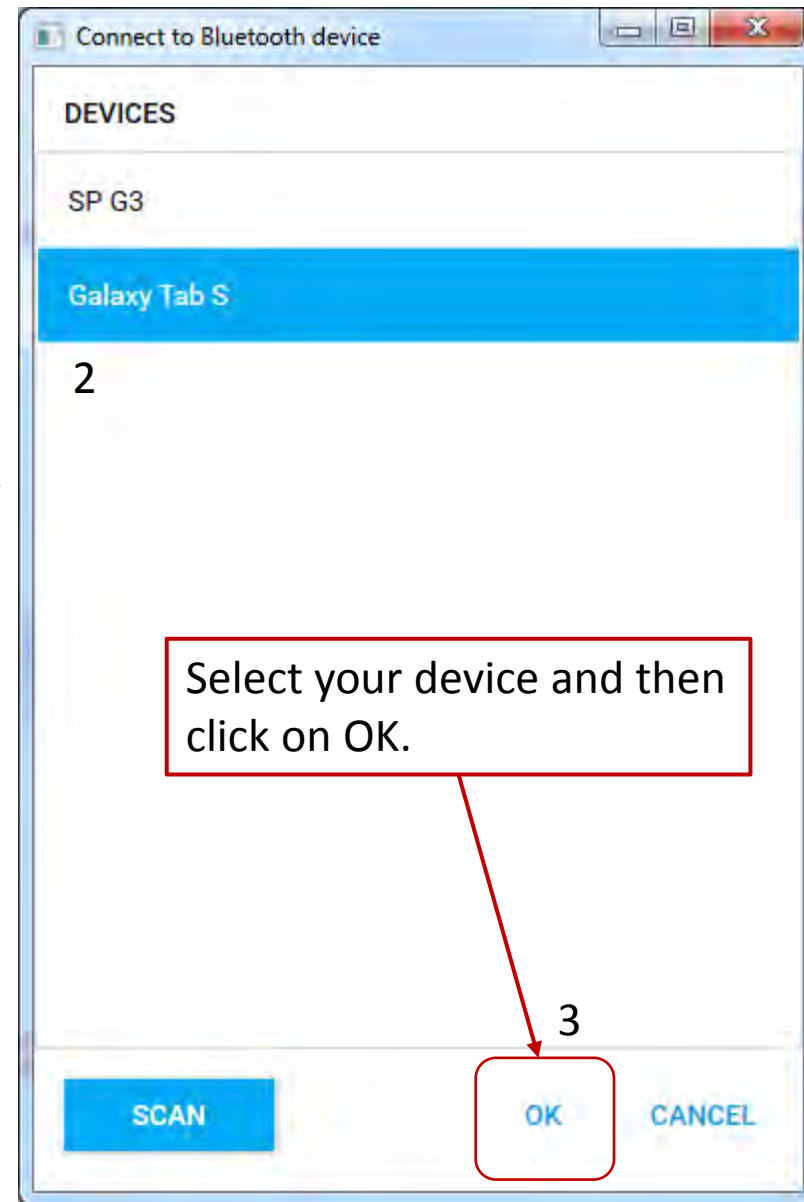
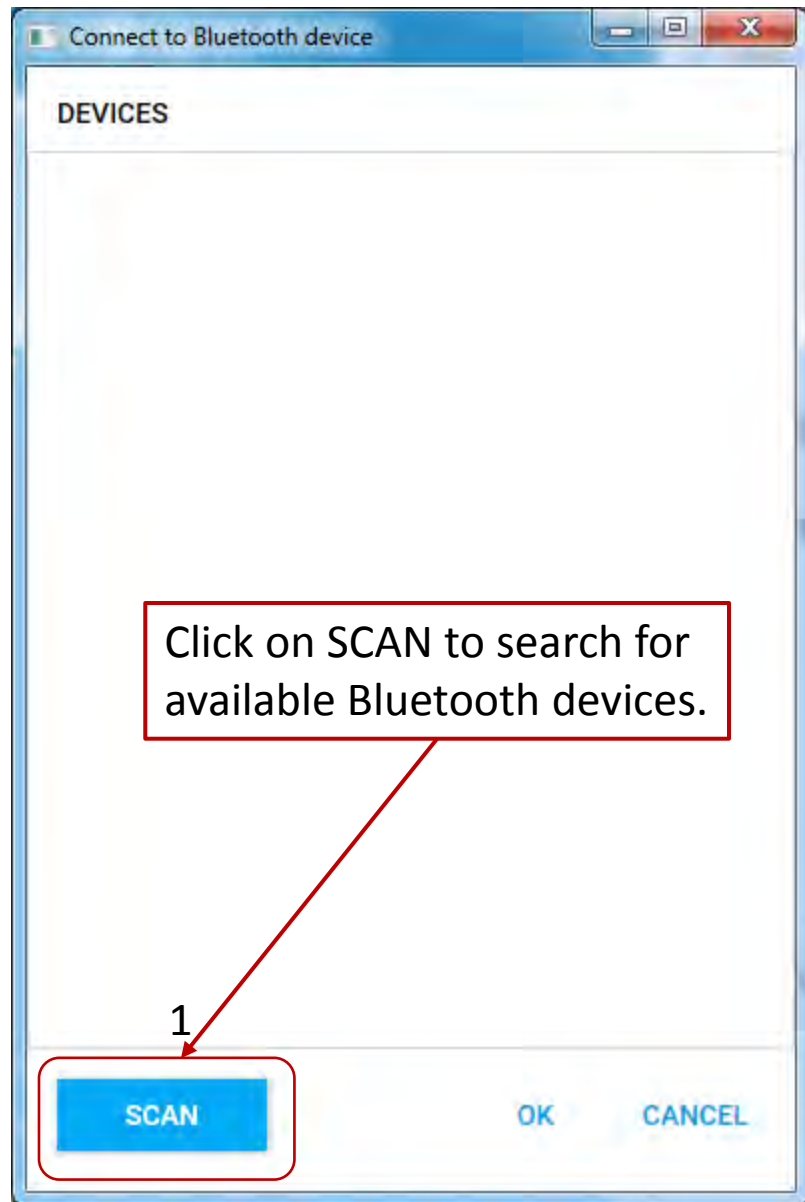


Select the MDP app before
connecting the AMD tool app on PC

Connect to Bluetooth Device (As client)

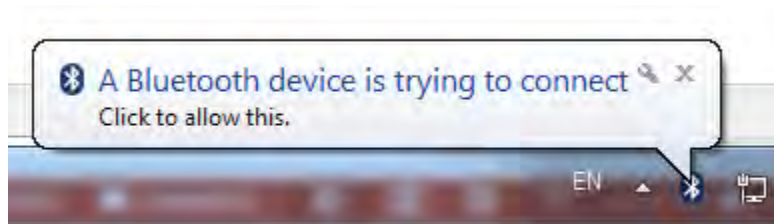


Connect to Bluetooth Device (As client)

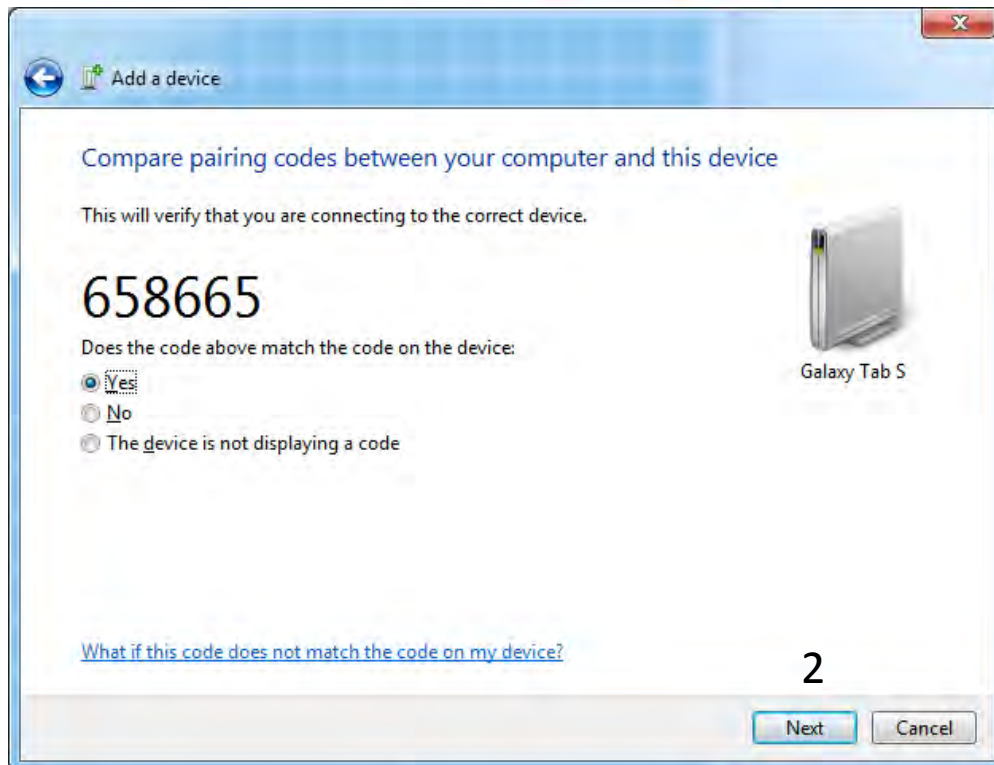


Connect to Bluetooth Device (As client)

If connecting to the device for the first time.
Compare code on the device with this code and click “Next”.
Also allow the pairing on the device itself.

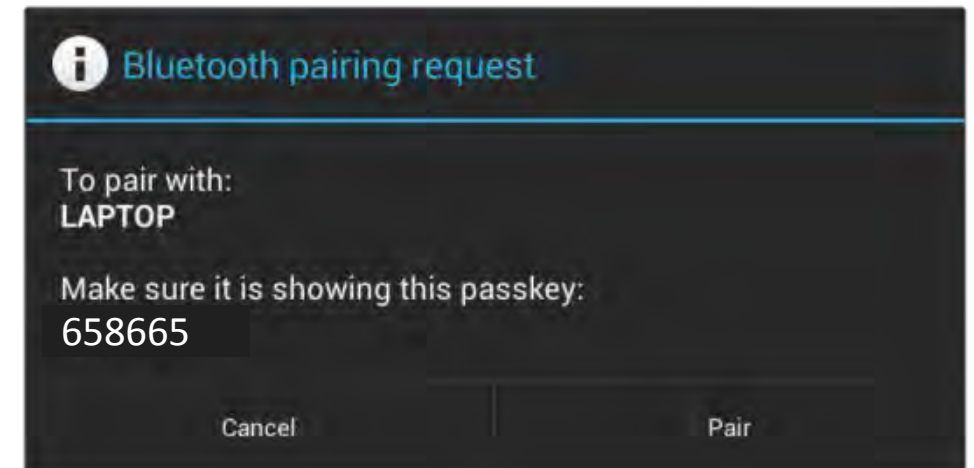


1



2

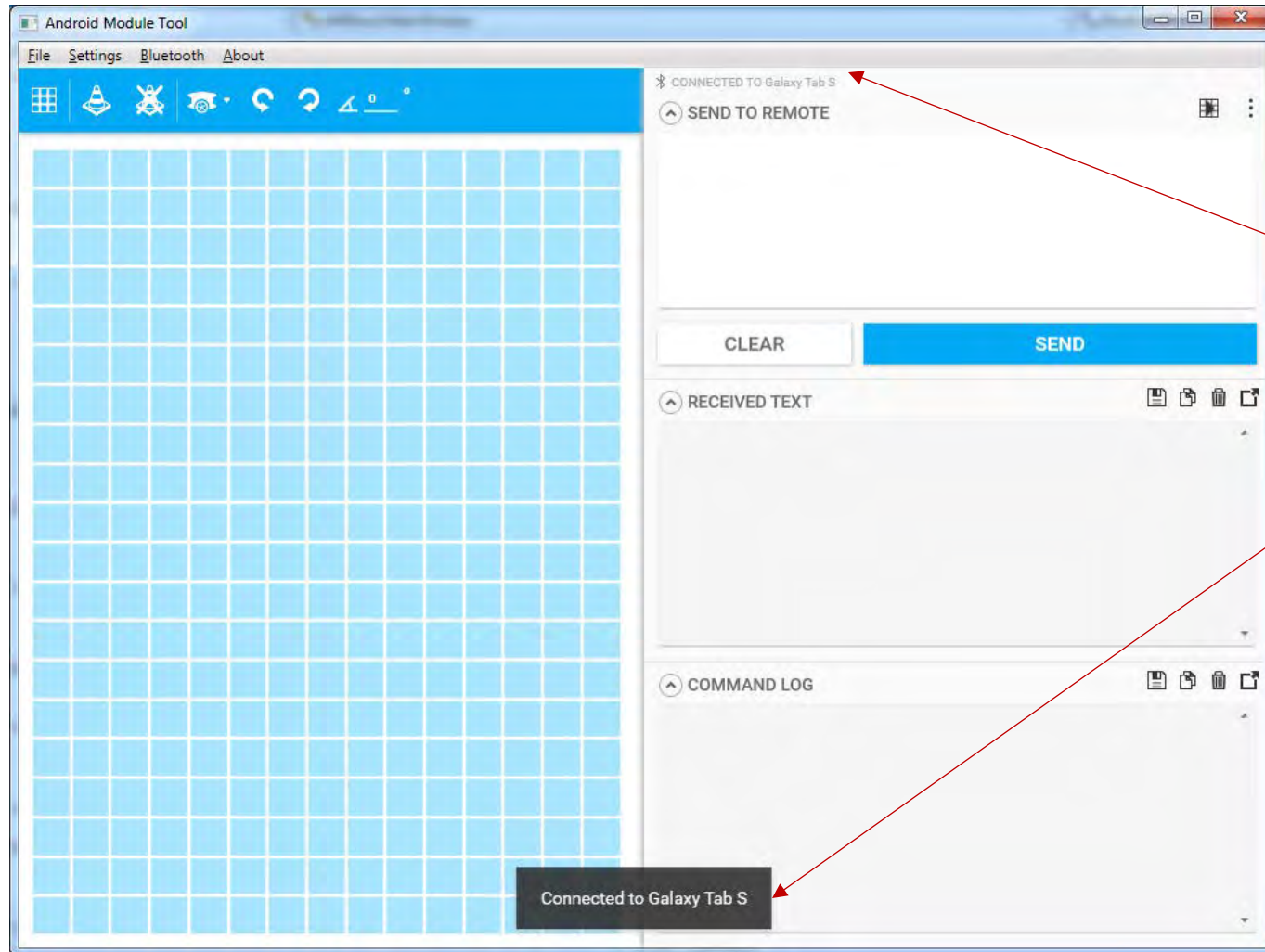
(Or equivalent message)



2

(Or equivalent message)

Connect to Bluetooth Device (As client)



Indication of successful connection to device

Virtual Arena

Place obstacle

Remove obstacle

Place robot

Change robot size

Adjust robot rotation

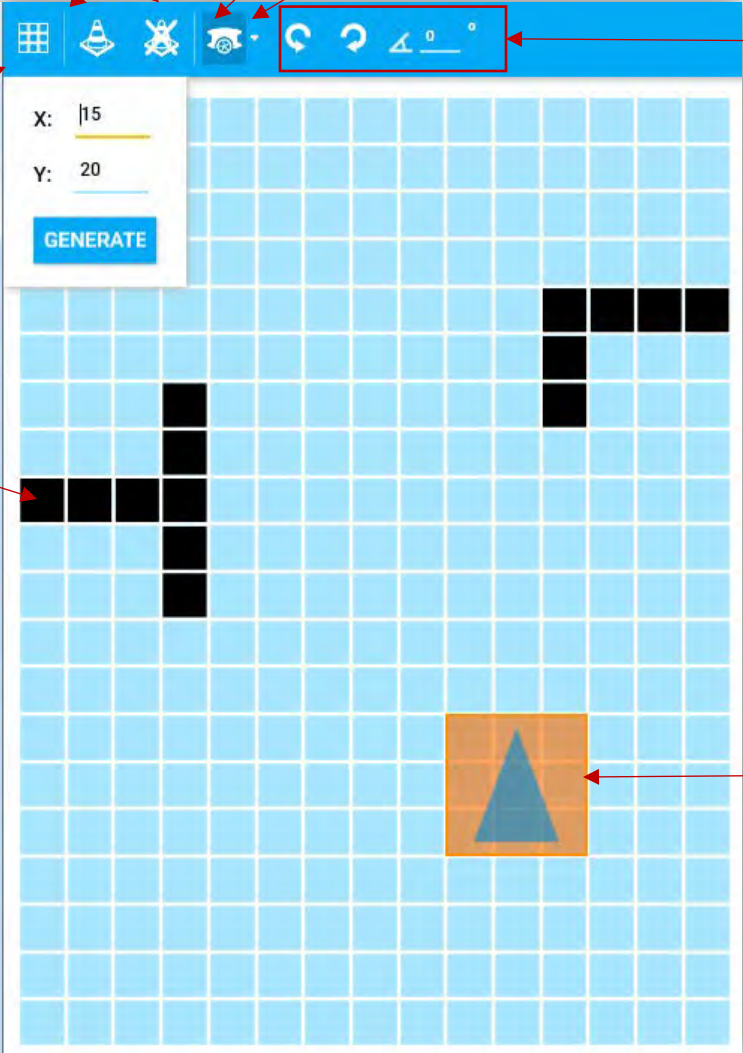
- Rotate left to next 90° interval
- Rotate right to next 90° interval
- Manually adjust robot orientation starting from North, clockwise (i.e. at 0°, robot points towards top of the virtual arena. Increasing the degree value will make the robot rotate clockwise.)

Generate Arena

Obstacle

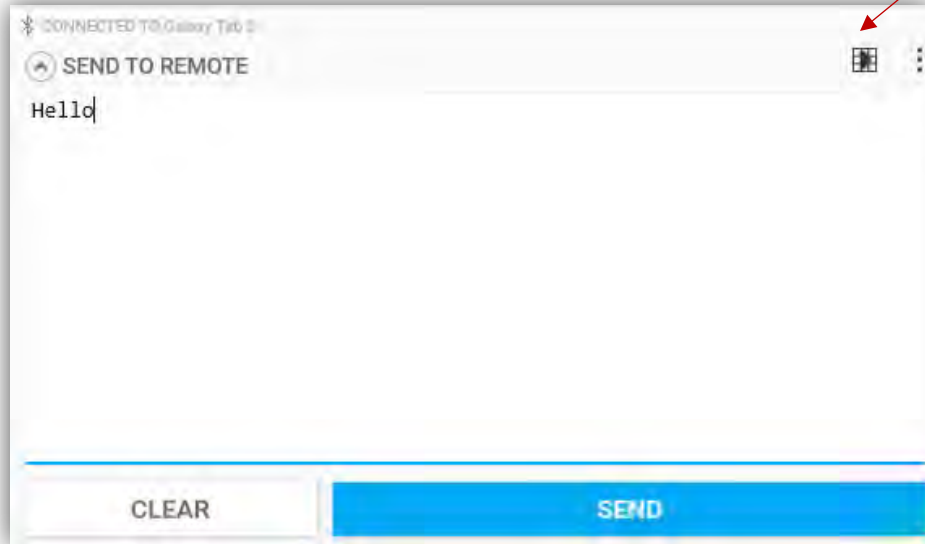
Save arena layout with robot as .txt file, allowing you to load it later.

Virtual robot (Facing North)



Send Text to Remote Device

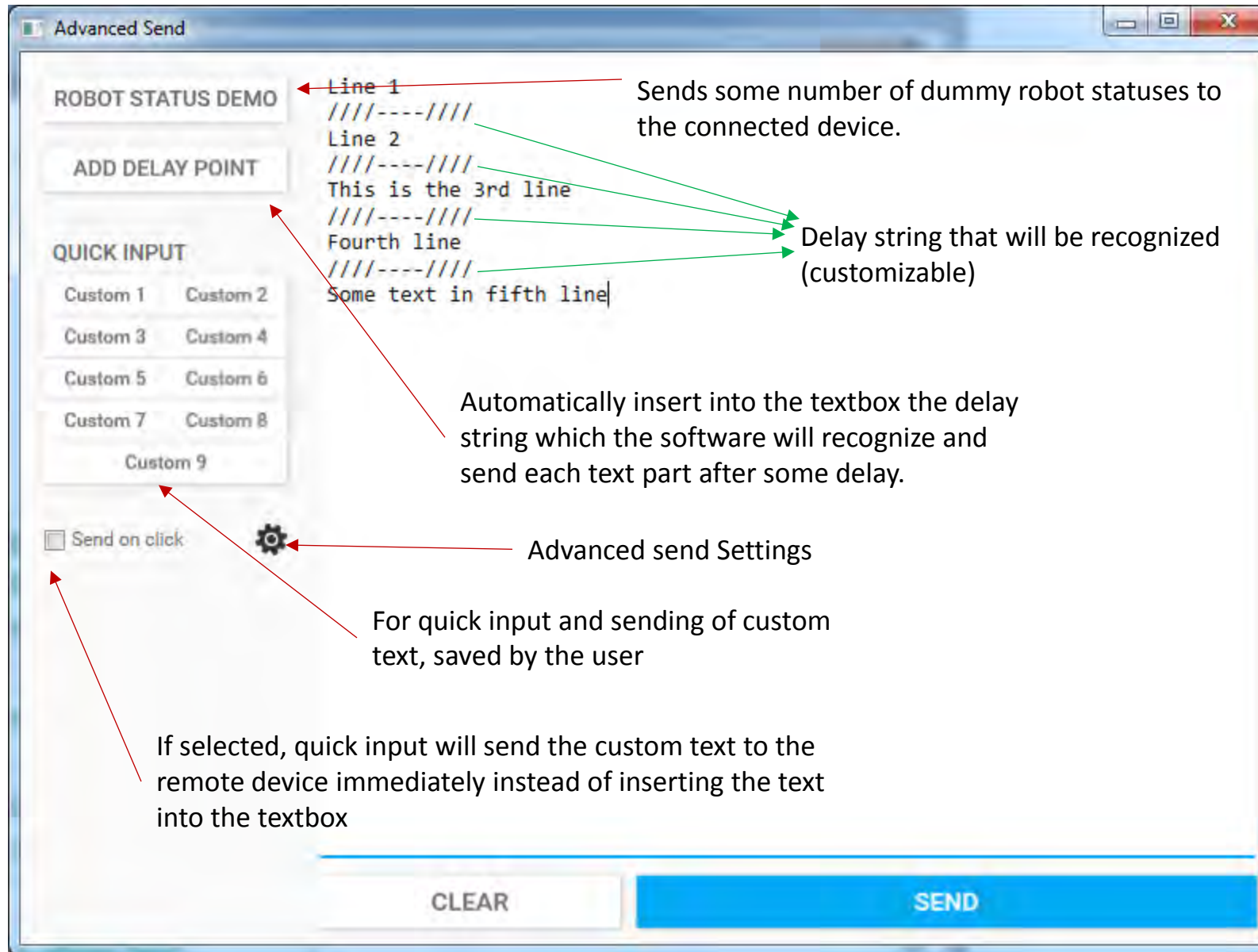
- If toggled, any changes to the virtual arena, including the robot, will let the software to send such arena information to the remote device.
- This will allow you to debug the display of the arena and the robot on your app.
- Format in which the remote device receives the arena information can be edited with custom scripts (Discussed later)



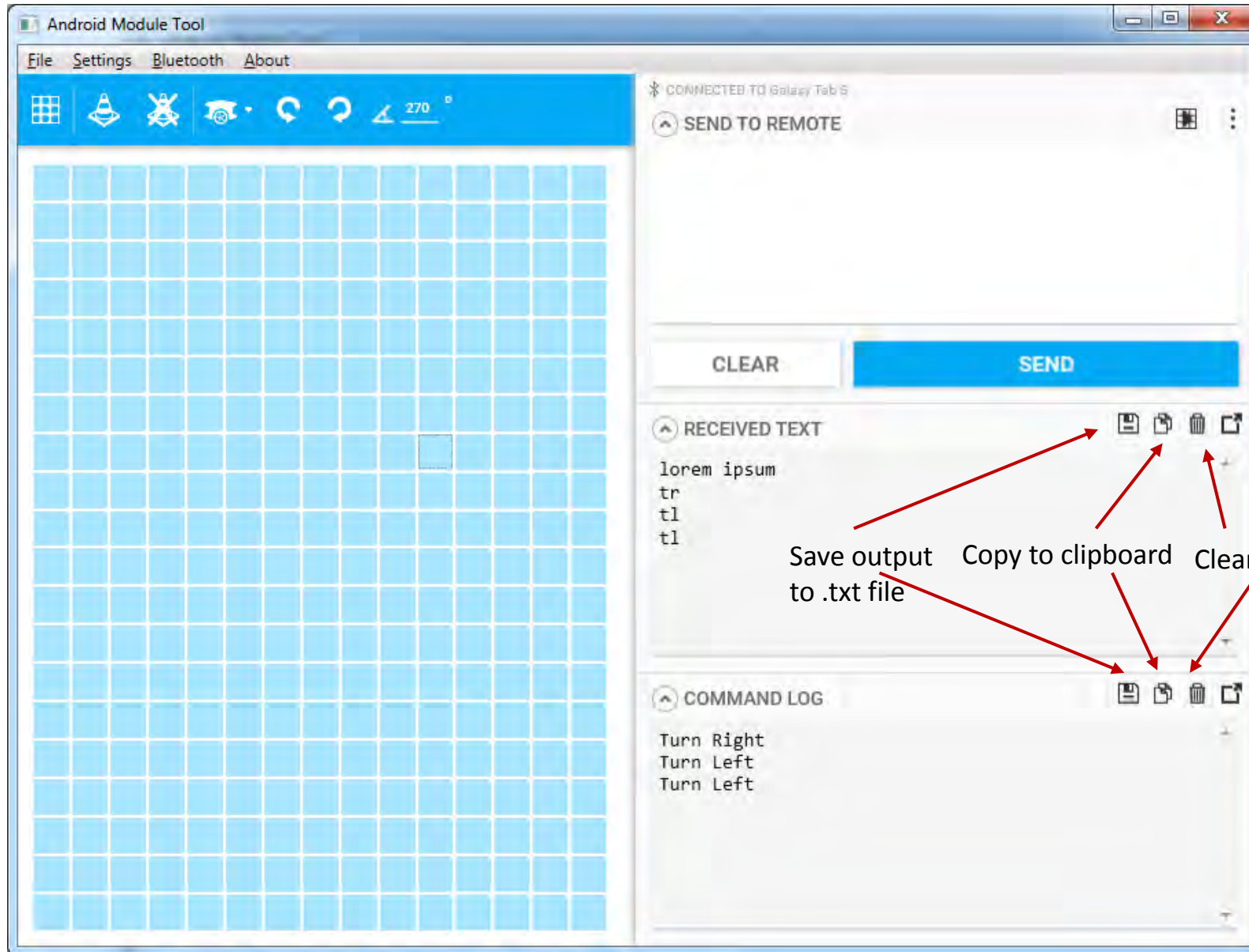
Click to show advanced send functions AND have more space to concentrate on sending text, especially when testing with long string of text.

Connection to device must be established first to use this.

Send Text to Remote Device (Advanced Send Window)



Received Text & Command Log



Received Text

Log of text that the remote device had sent.

Command Log

If any received text is a command, the corresponding command will be displayed. The virtual robot will also react accordingly to the command.

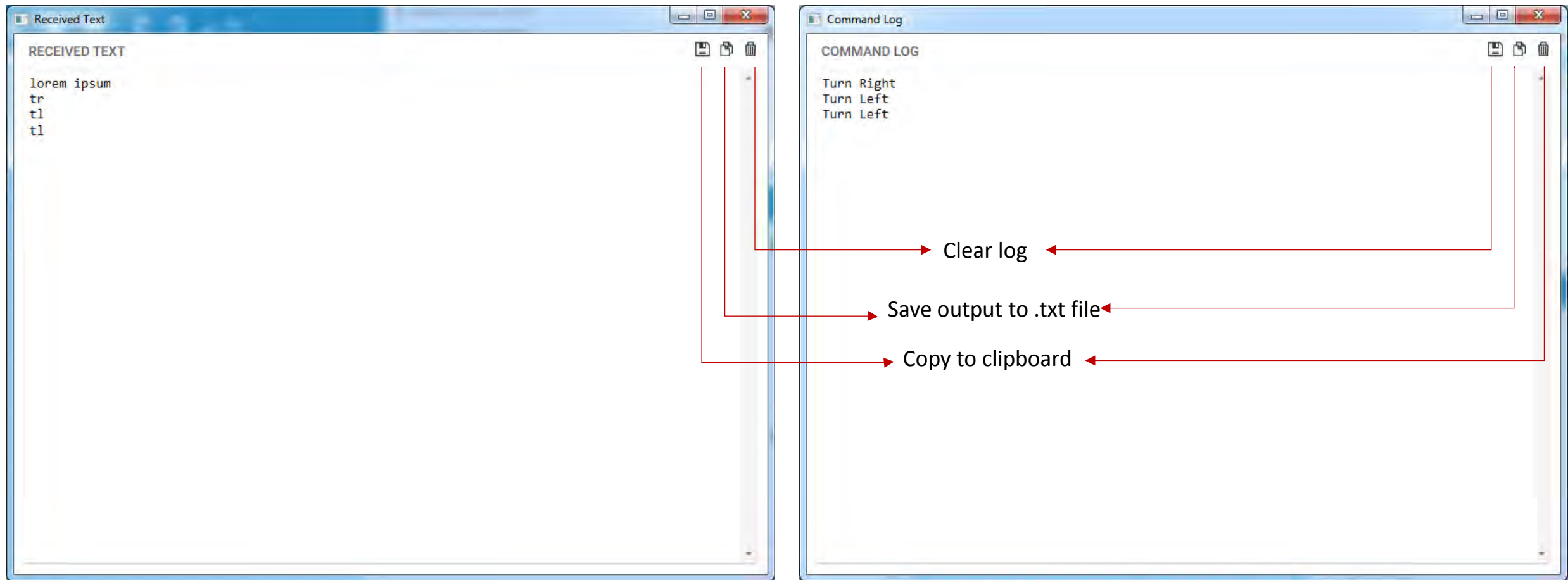
Save output
to .txt file

Copy to clipboard

Clear log

Expand to Window to concentrate on receiving
text/ checking commands, especially when
testing with long string of text.

Received Text & Command Log (Expanded Window)



Expanded window to concentrate on receiving text/ checking commands, especially when testing with long string of text.

Settings

Settings

Received Commands

Edit the commands for the virtual robot to recognize.

sl	f	sr
STRAFE LEFT	FORWARD	STRAFE RIGHT
tl	r	tr
ROTATE LEFT	REVERSE	ROTATE RIGHT
beginExplore	beginFastest	sendArena
BEGIN EXPLORATION	BEGIN FASTEST PATH	SEND ARENA INFO

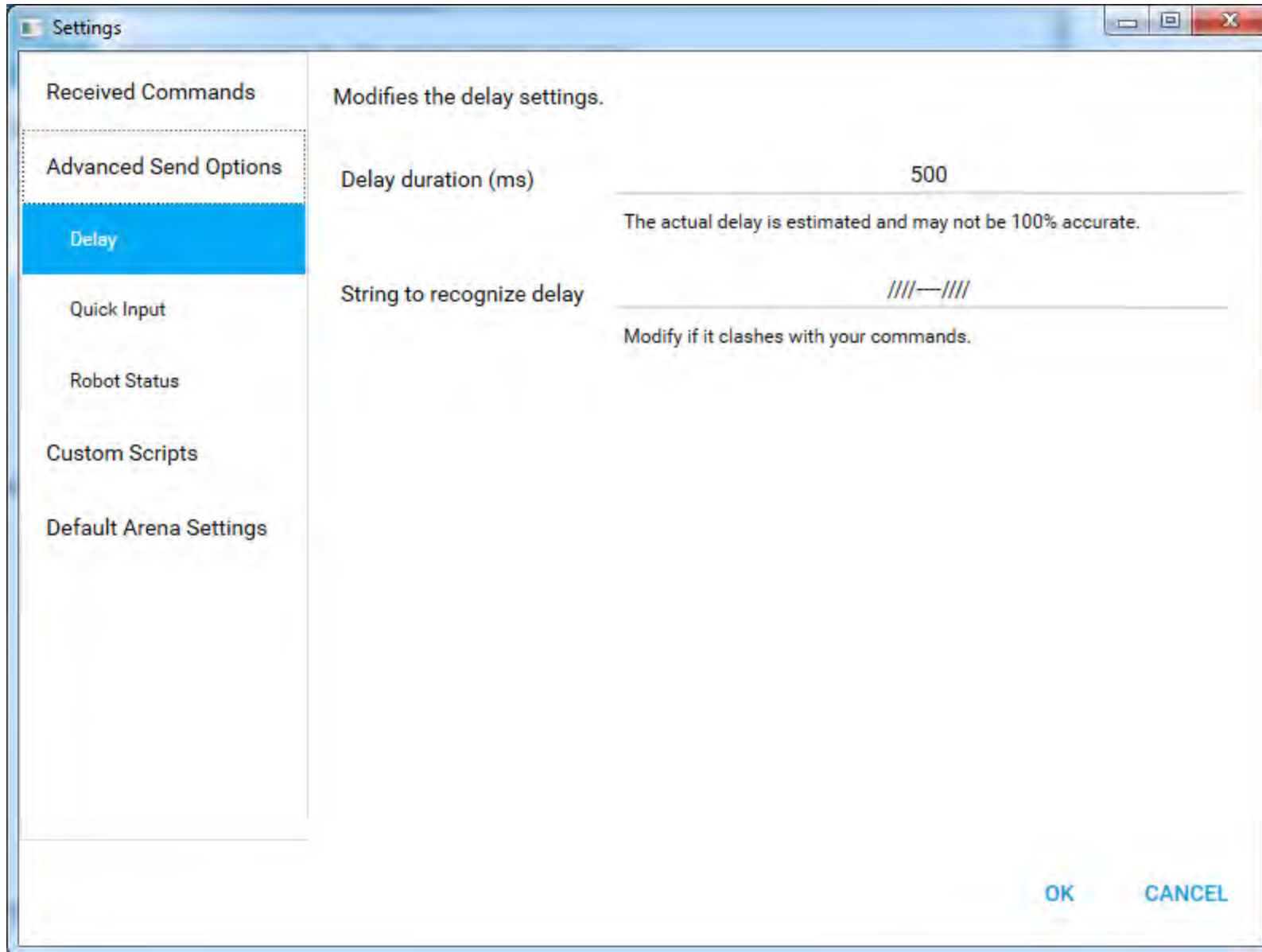
OK CANCEL

Allow you to modify the commands for the virtual robot to recognize.

For example if the command for forward is set to “*move:forward*”, whenever the software receives this text, the virtual robot will move forward in the arena.

The “Send Arena Info” command will let the software send the arena obstacle and robot position information to the android remote.

Settings



The screenshot shows a 'Settings' window with a sidebar on the left and a main content area on the right. The sidebar contains the following items: 'Received Commands', 'Advanced Send Options', 'Delay' (highlighted in blue), 'Quick Input', 'Robot Status', 'Custom Scripts', and 'Default Arena Settings'. The main content area is titled 'Modifies the delay settings.' and contains two settings:

- Delay duration (ms)**: A text input field containing the value '500'. Below it is a note: 'The actual delay is estimated and may not be 100% accurate.'
- String to recognize delay**: A text input field containing the value '////—////'. Below it is a note: 'Modify if it clashes with your commands.'

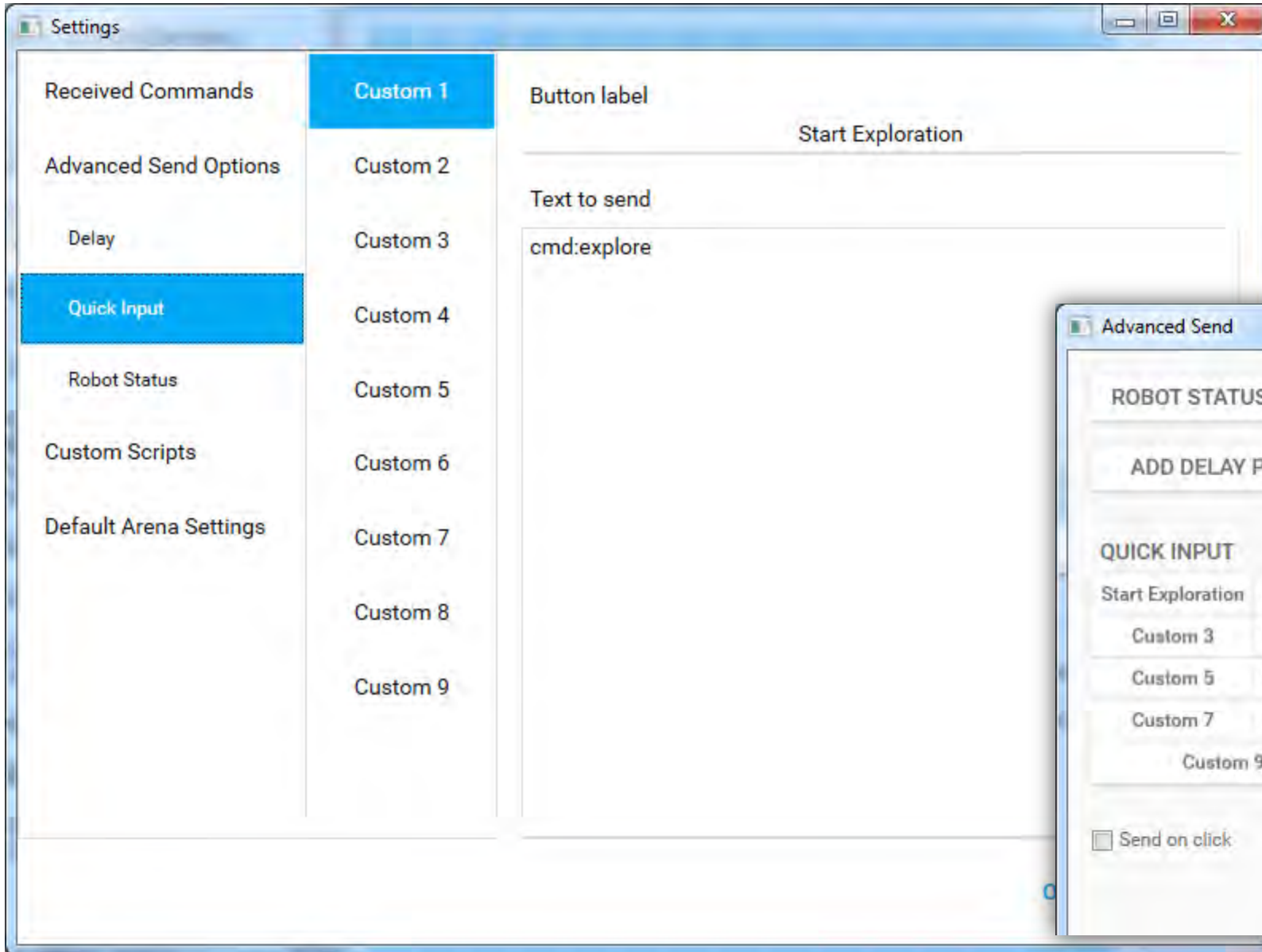
At the bottom right of the window are two buttons: 'OK' and 'CANCEL'.

Options for Advanced Send

Allow you to modify the delay duration for the advanced send.

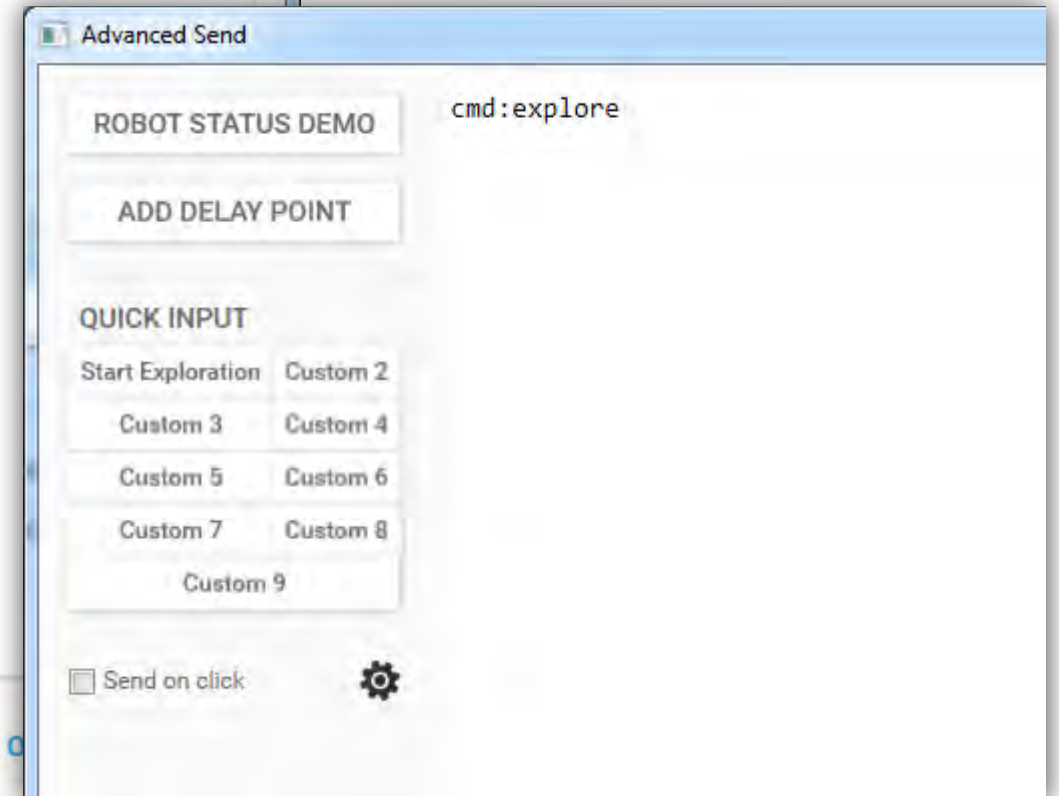
Allow you to modify the string to recognize as a delay, especially if it clashes with the team's commands.

Settings



Options for Advanced Send

Allow you to modify the Button Labels and the text associated with the button for the Advanced Send.



Settings

Settings

Received Commands

Advanced Send Options

Delay

Quick Input

Robot Status

Custom Scripts

Default Arena Settings

Customize the status commands and select the status messages to be included to send.

Number of messages to send

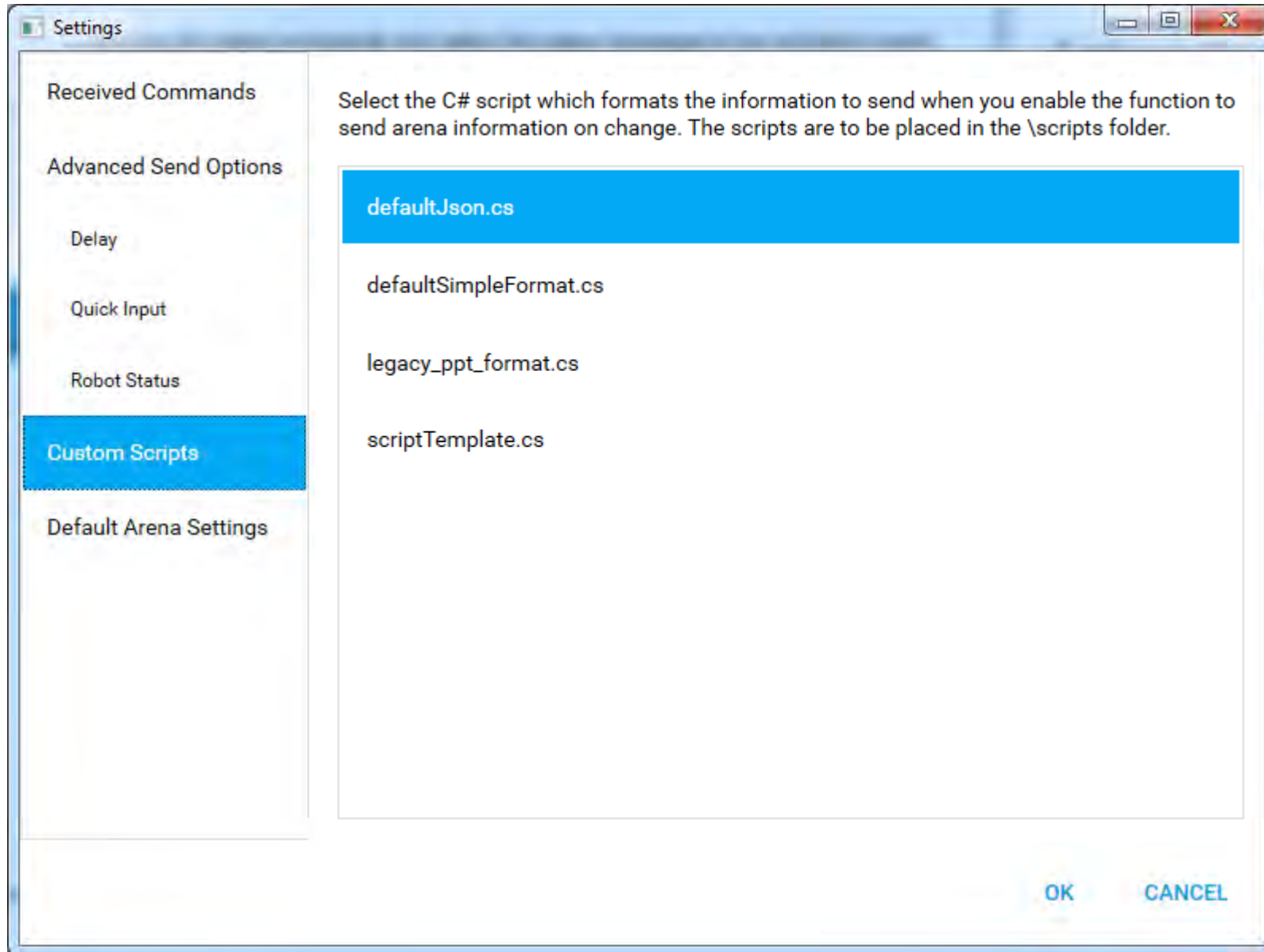
<input checked="" type="checkbox"/> {"status":"exploring"}	<input checked="" type="checkbox"/> {"status":"reversing"}
<input checked="" type="checkbox"/> {"status":"fastest path"}	<input type="checkbox"/> {"status":"taking over the world"}
<input checked="" type="checkbox"/> {"status":"turning left"}	<input type="checkbox"/> {"status":"accessing nuclear codes"}
<input checked="" type="checkbox"/> {"status":"turning right"}	<input type="checkbox"/> {"status":"reading your mind"}
<input checked="" type="checkbox"/> {"status":"moving forward"}	<input type="checkbox"/> {"status":"10010101"}

OK CANCEL

Options for Advanced Send

Customization of the robot status demo. This will remove the format restrictions as the software will send only robot status message specified by the user.

Settings



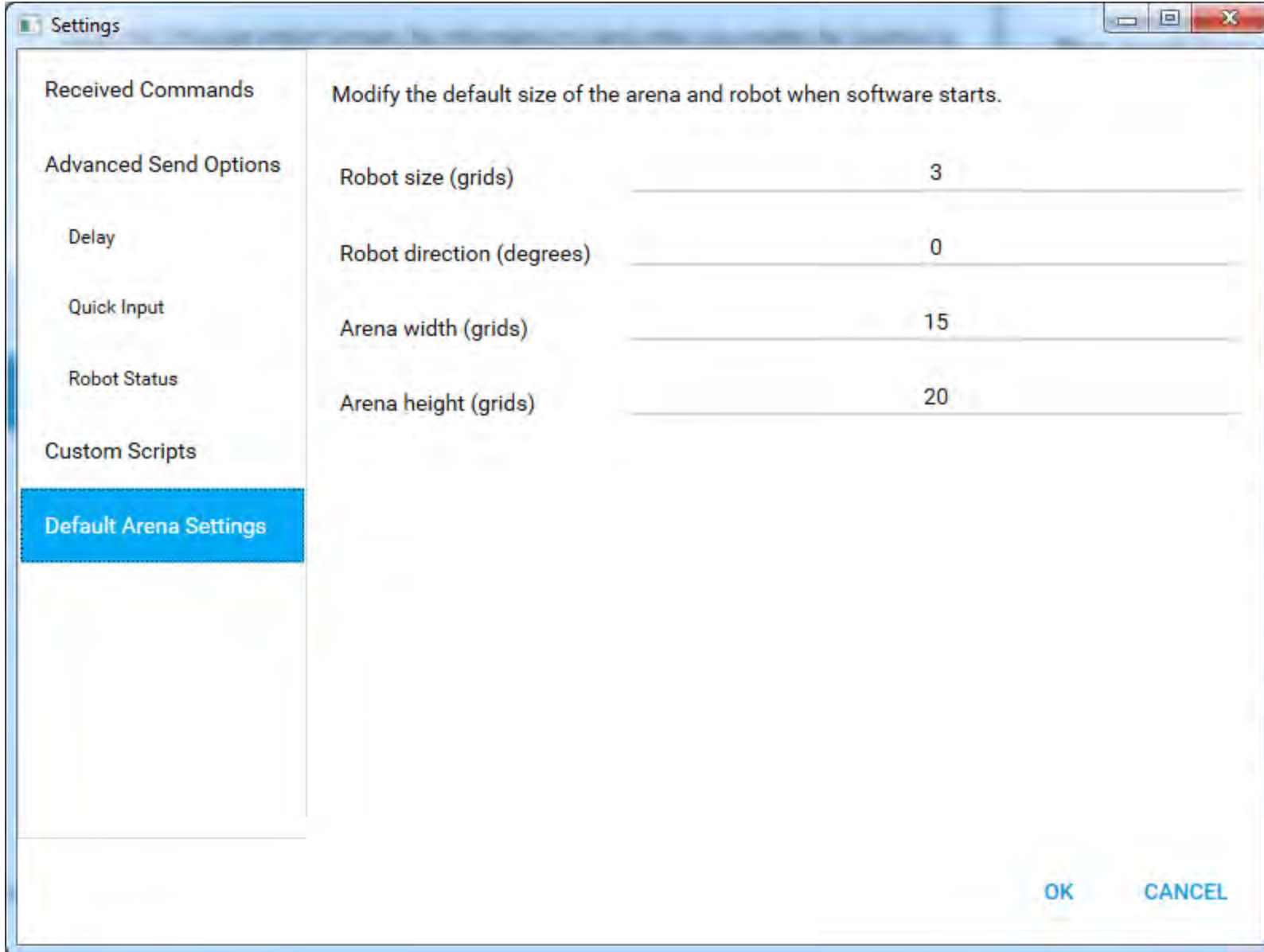
Custom scripts to format arena information that would be sent to remote device.

Instructions on how to create your own scripts are detailed in the 3 example files in “scripts” folder.

“scriptTemplate.cs” is a template file with comments detailing on how to use and implement it.

“defaultJson.cs” and “defaultSimpleFormat.cs” are example implementations that you can take reference from or to use.

Settings



The screenshot shows a 'Settings' window with a sidebar on the left containing the following menu items: 'Received Commands', 'Advanced Send Options', 'Delay', 'Quick Input', 'Robot Status', 'Custom Scripts', and 'Default Arena Settings'. The 'Default Arena Settings' item is highlighted in blue. The main area of the window contains the text 'Modify the default size of the arena and robot when software starts.' followed by four settings, each with a text input field containing a numerical value: 'Robot size (grids)' with '3', 'Robot direction (degrees)' with '0', 'Arena width (grids)' with '15', and 'Arena height (grids)' with '20'. At the bottom right of the window are 'OK' and 'CANCEL' buttons.

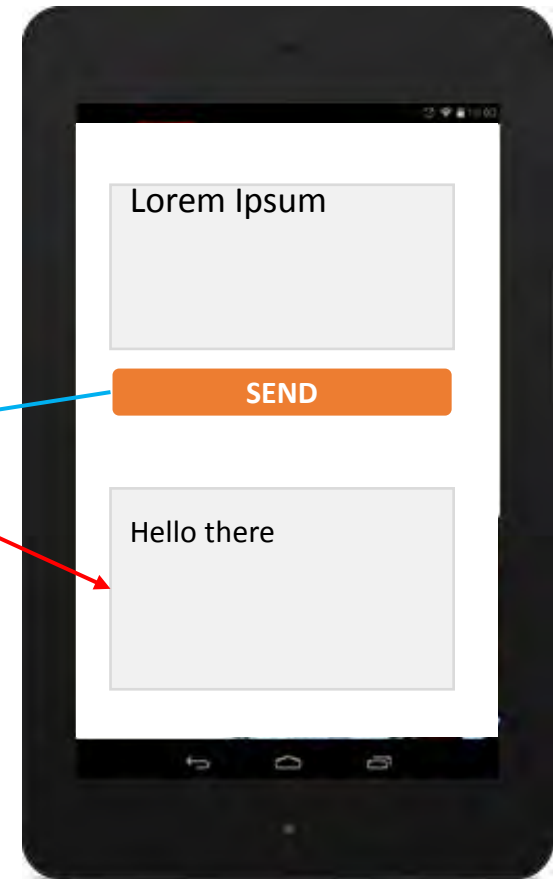
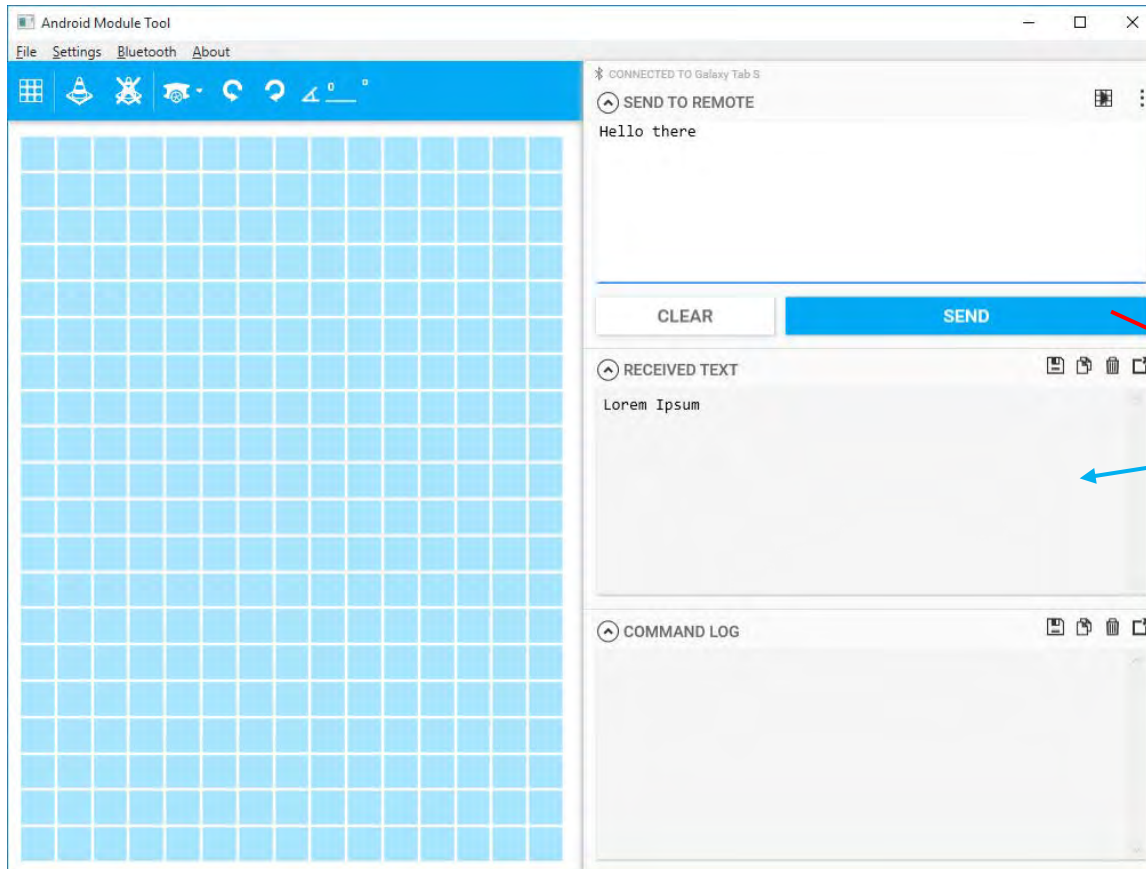
Setting	Value
Robot size (grids)	3
Robot direction (degrees)	0
Arena width (grids)	15
Arena height (grids)	20

Default Arena Settings

Adjust the default arena settings that will load on start.

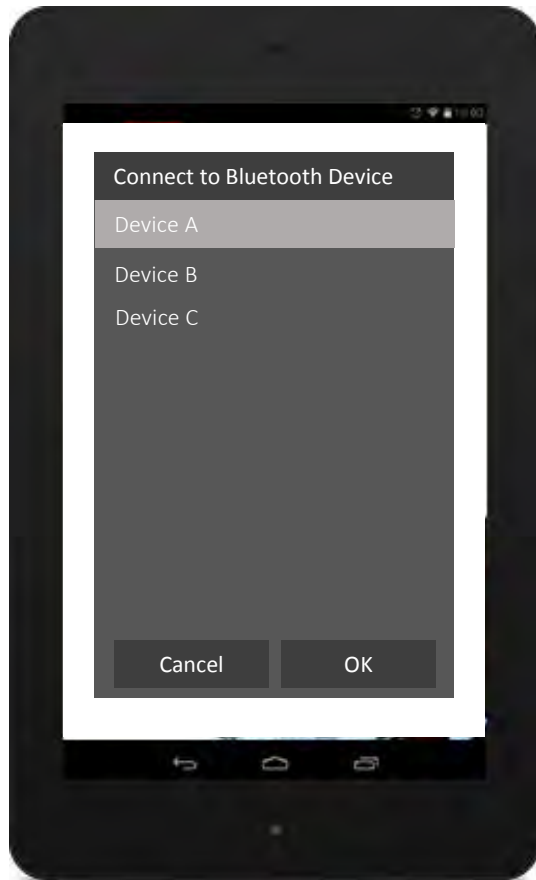
Clearing checklist - C1

- The Android application (AA) is able to transmit and receive text strings over the Bluetooth serial communication link.

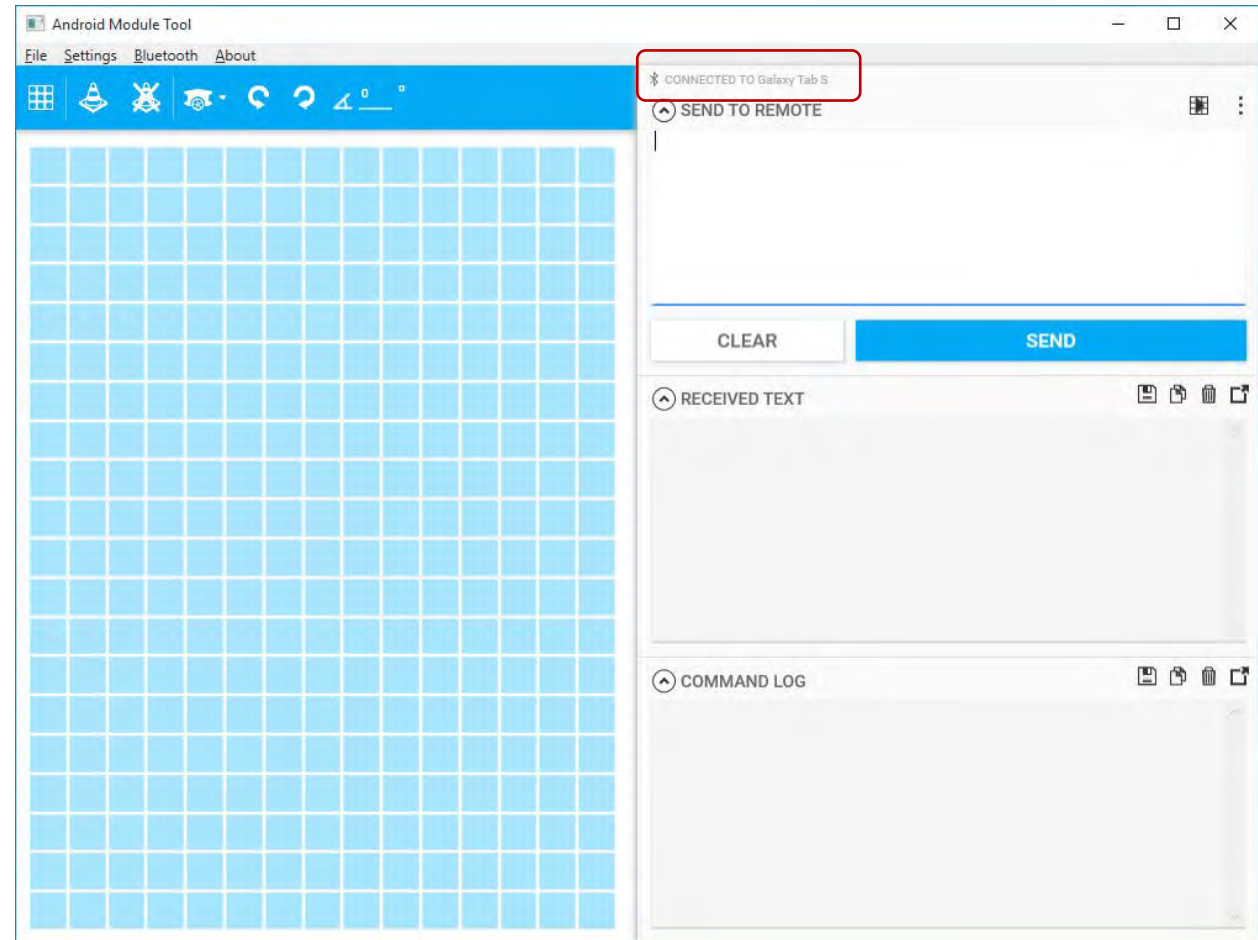


Clearing checklist – C2

- Functional graphical user interface (GUI) that is able to initiate the scanning, selection and connection with a Bluetooth device.



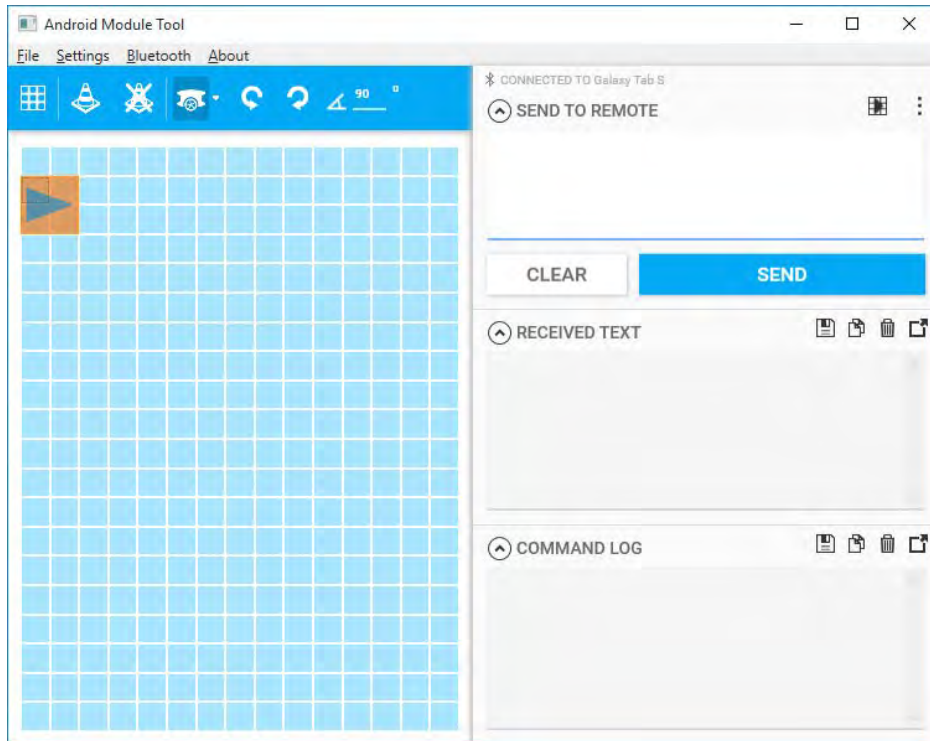
The software can act as Bluetooth server



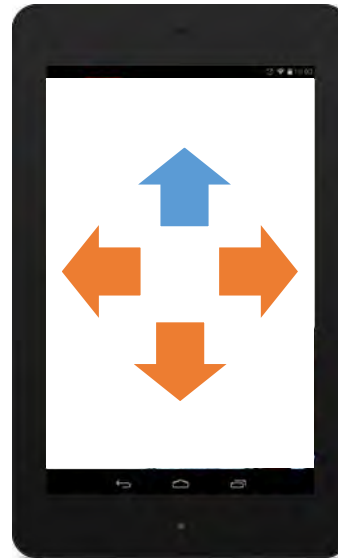
Clearing checklist – C3

- Functional GUI that provides interactive control of the robot movement via the Bluetooth link

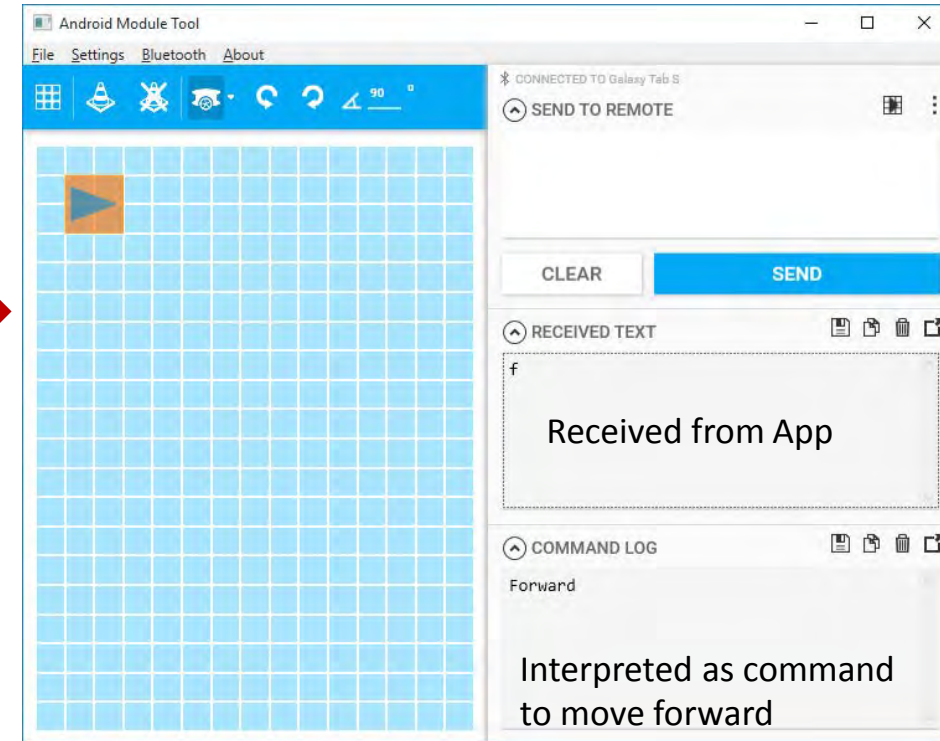
Initial state



Move forward

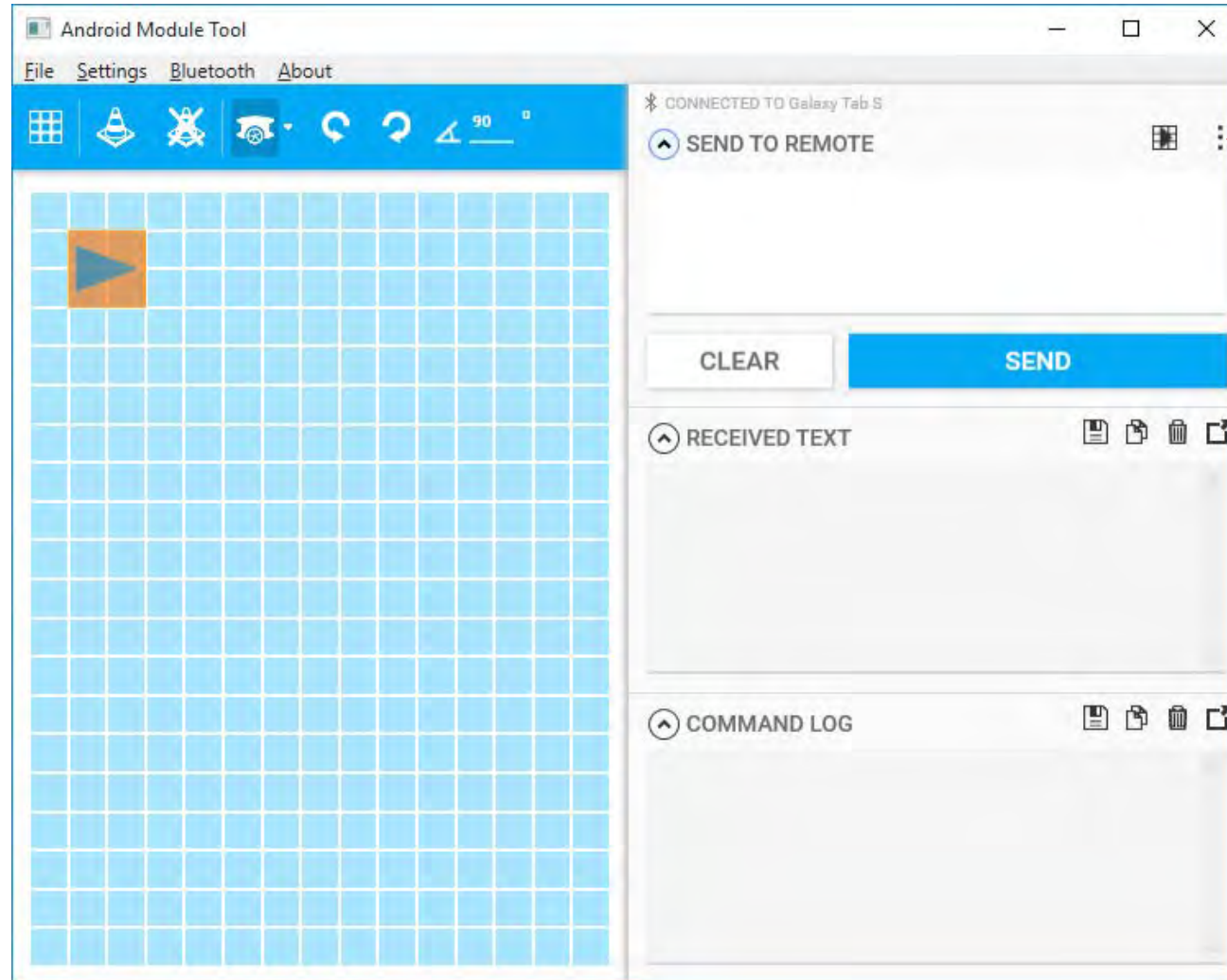


Robot position shifted



Clearing checklist – C4

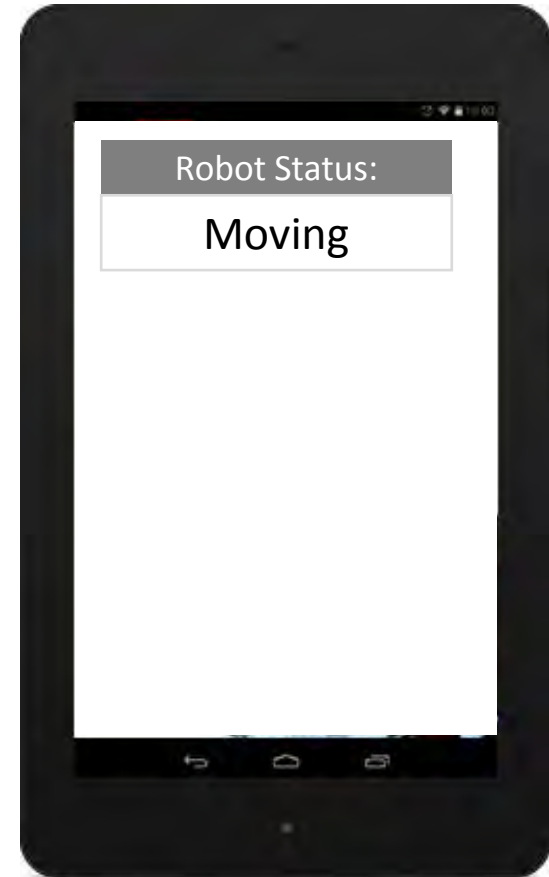
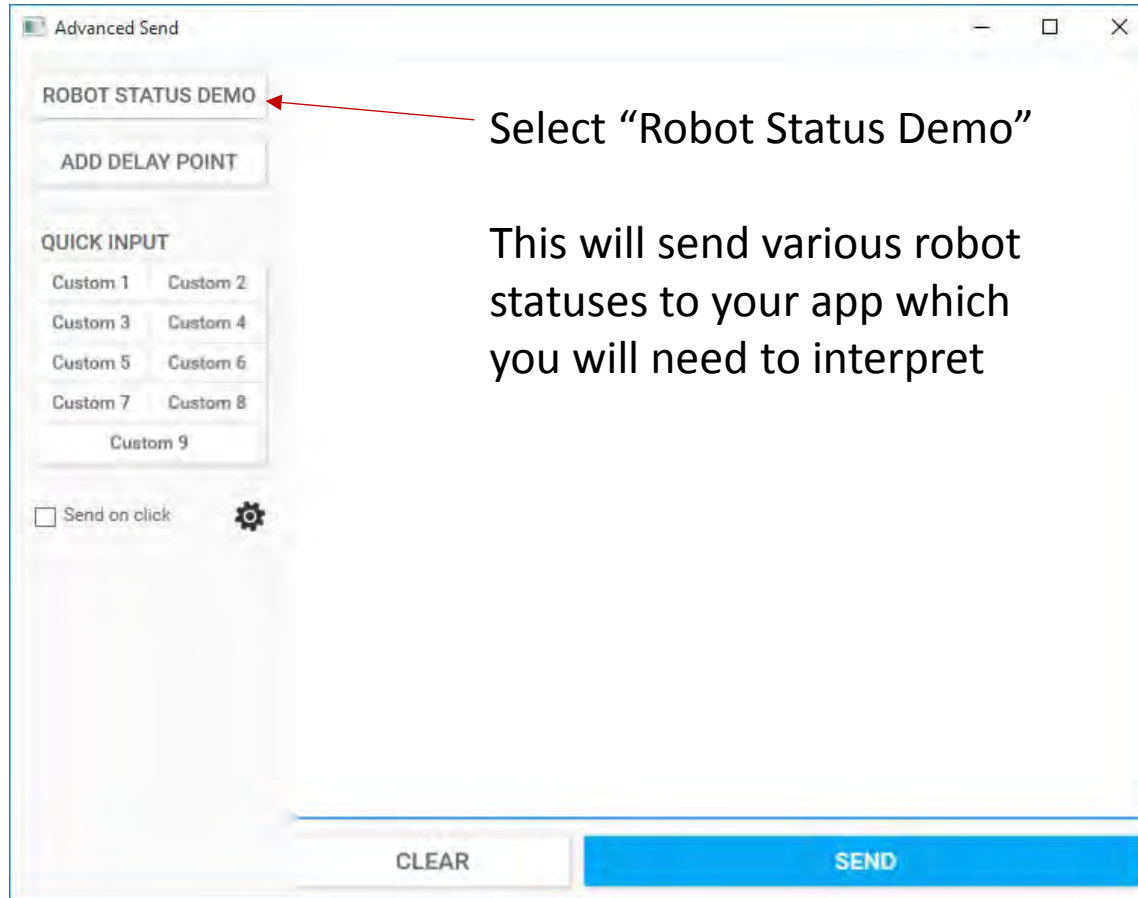
- Functional GUI that indicates the current status of the robot



Select this to use
advanced send functions

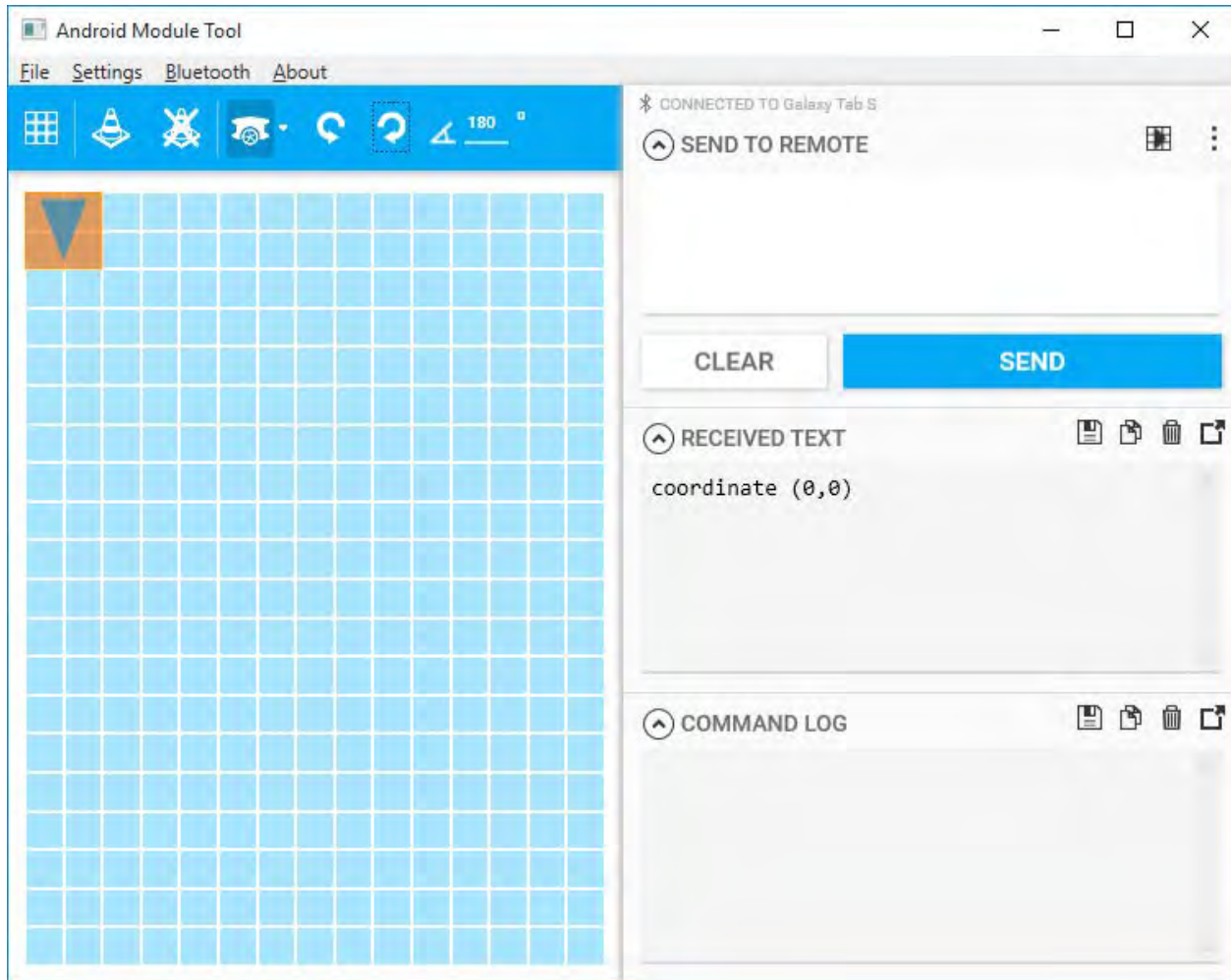
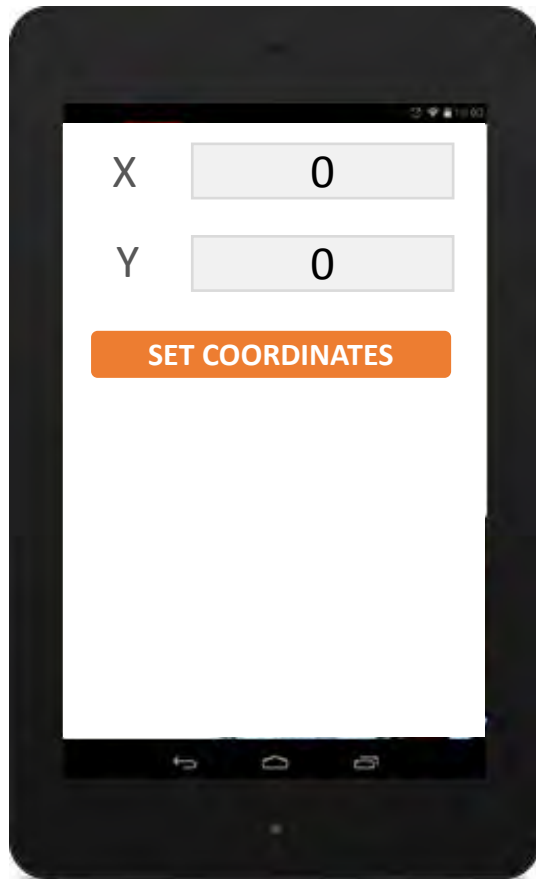
Clearing checklist – C4

- Functional GUI that indicates the current status of the robot



Clearing checklist – C5

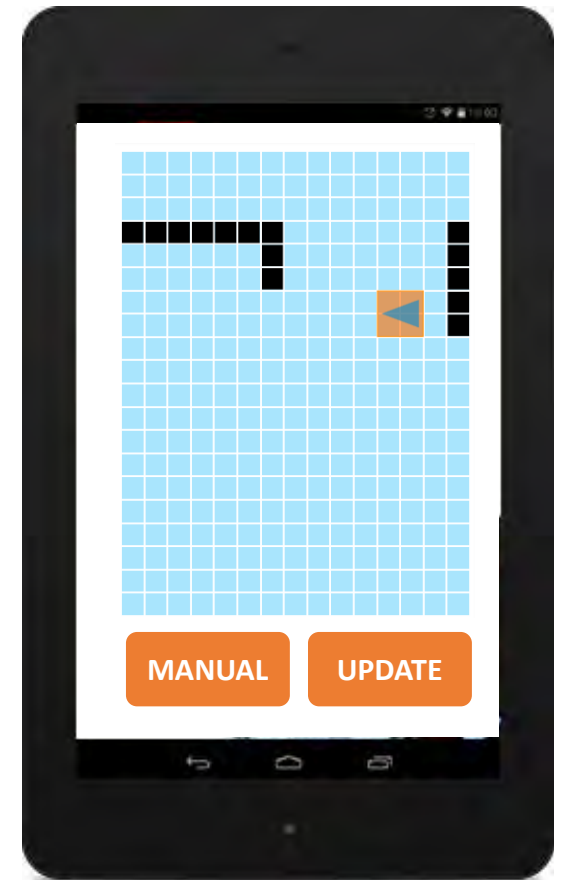
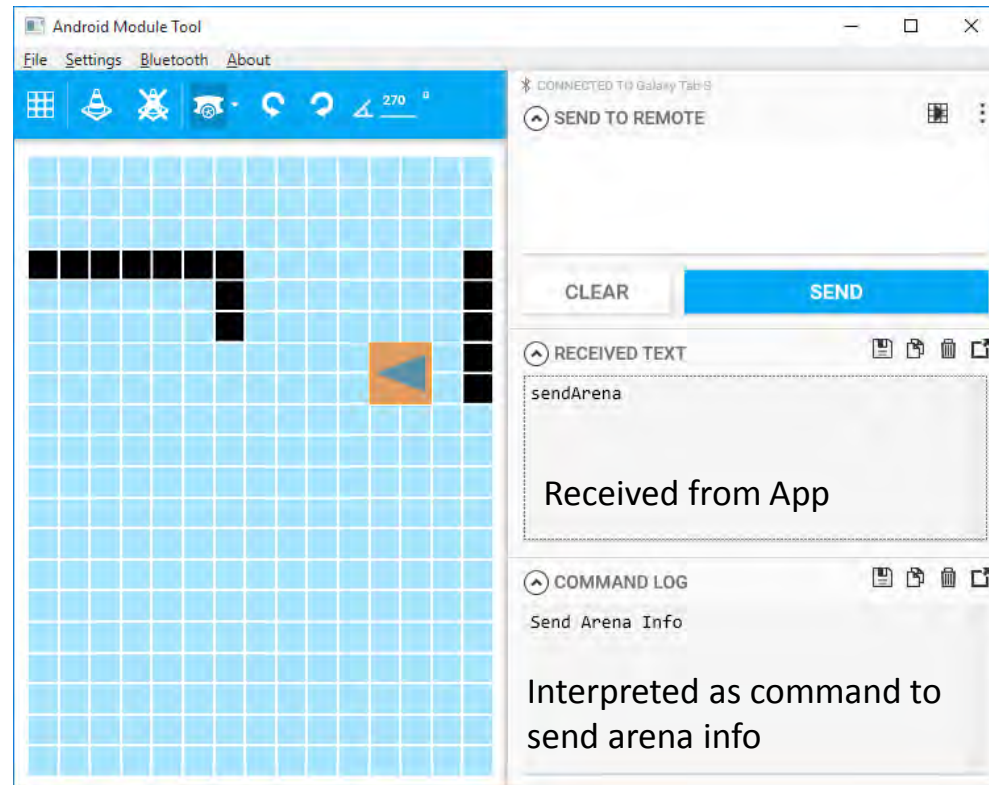
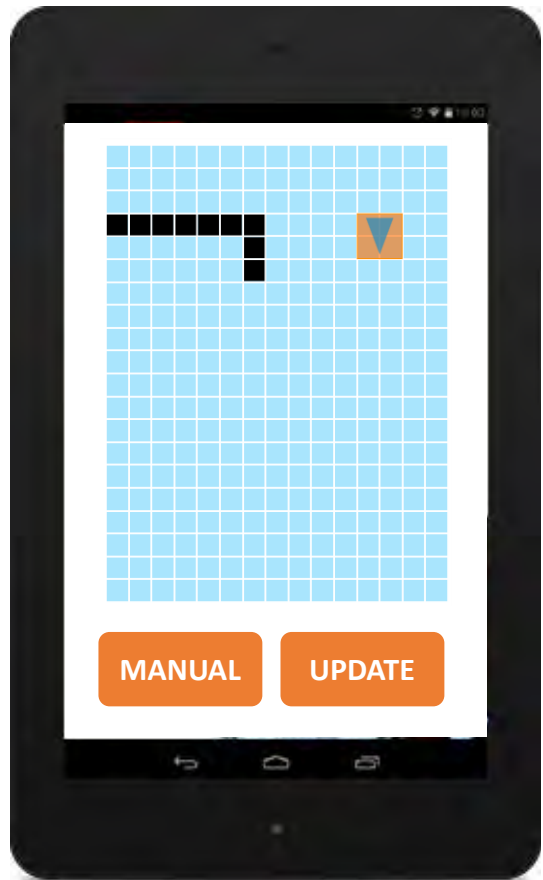
- Update Robot start coordinates



Clearing checklist – C7

- Functional GUI that provides the selection of Manual or Auto updating of graphical display of the maze environment.

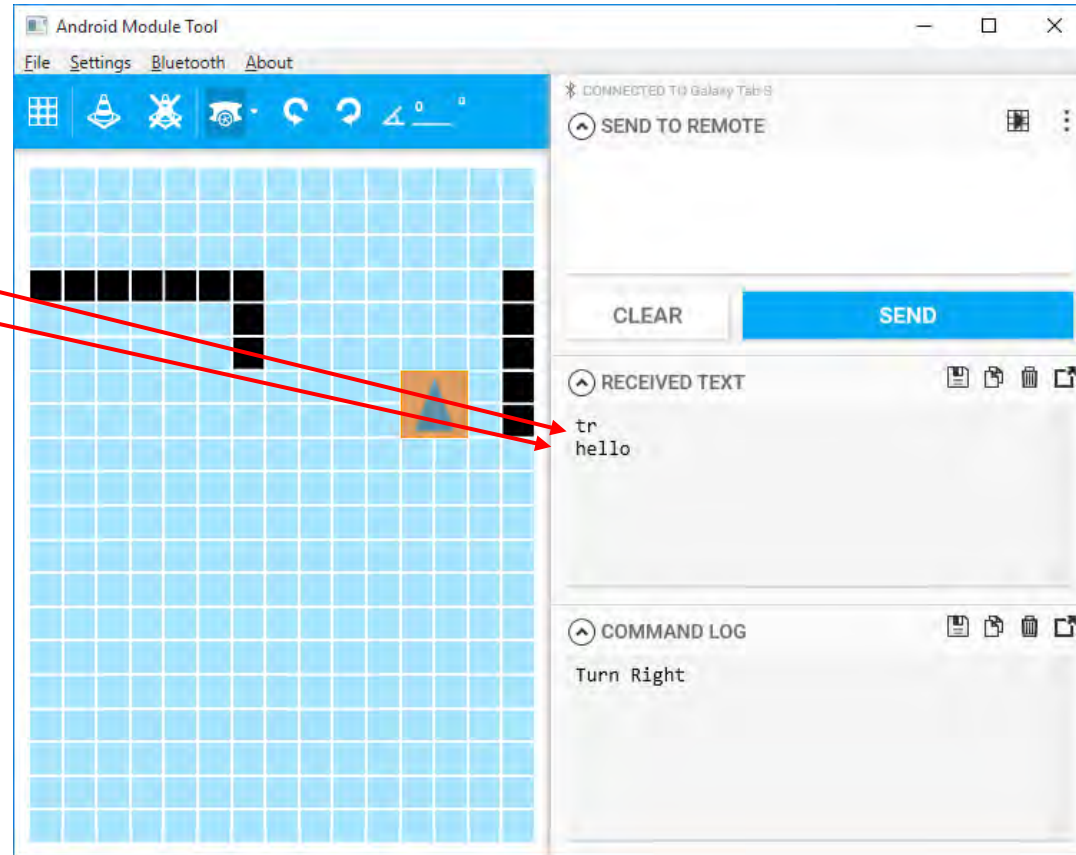
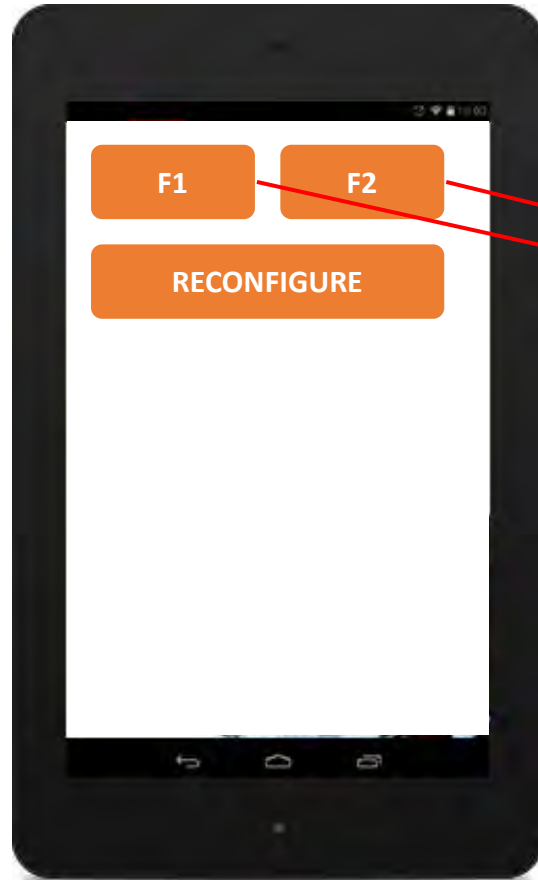
1. Add obstacles and/or change position of robot on tool
2. Send command to request for arena info on app (Manual or Auto)



Clearing checklist – C8

- Functional GUI that provides two buttons that supports persistent user reconfigurable string commands to the robot.

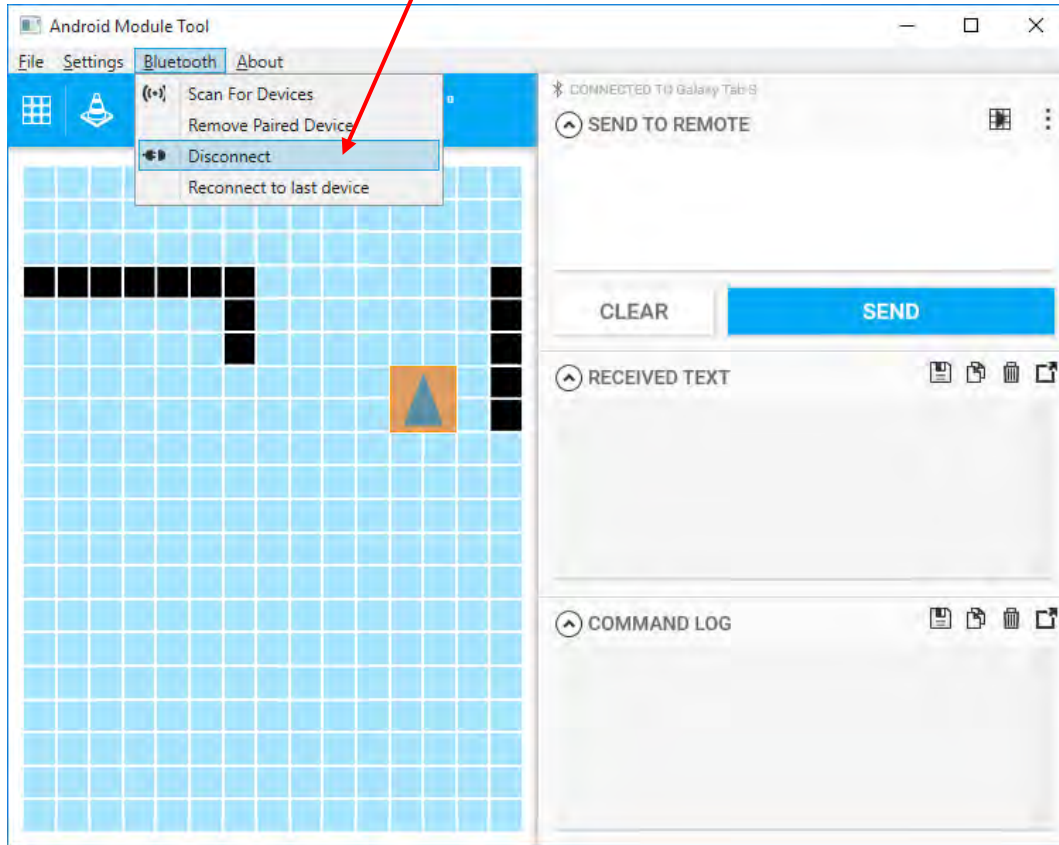
When button is pressed



Clearing checklist – C9

- Robust connectivity with Bluetooth device.

Disconnect



Select “Reconnect to last device”
Ensure that there is connection to your app after this.

