

Star Trek Multiplayer Edition Version 1.0

Installation

To install this program, simply send it to your calculator, via your favorite flavor of linking software. The recommended programs for this are *TI Connect* for Windows and *TI Connect X* for Macintosh. You will need ____ bytes of available RAM on your calculator in order for the transfer to be successful. In order to use the networking capabilities of this program, you will need to also send the Flash Application *DoorsCS7.1* to your calculator. This may be downloaded from <http://cemetech.net>. It will be packaged with this program for ease of transfer, pending approval from the designer. See the Credits section.

The first time you run this program on your calculator, it will initialize your variables and create the game's save file, an application variable by the name of *STSave*. This is automatic. A window will appear, indicating that the installation has taken place. This may be clicked off. See the section on the Interface for details.

Program Description

This program simulates the bridge of a Federation star ship from the fabled Star Trek series. This program allows you to fight against (or ally with) other players. Using the function keys on the top row of the keypad, you can interact with the system of your ship. Using other hotkeys described in this manual, you can fire the ship's weapons. You will also be able to send text to other players on the network. See the section on Networking Protocol for details.

Interface

The interface of this program is powered by the DSC 7.1 GUI API. This is a series of assembly routines made available to programmers to easily render graphics to the screen. The interface, including object and mouse rendering as well as clicking, is handled by *DoorsCS7.1* itself. The main interface of **Star Trek MP v1.0** includes a window with five options: Play Game, Service Ship, Edit Info, About, and Quit. You can use the arrow keys to move the GUI Mouse around the screen, until it hovers over the button you wish to click on. Then, press [2nd] to click.

On the large GUI window, clicking on the 'x' in the upper right hand corner of the screen will quit the game. On the smaller GUI windows, you may either click on the 'x' or press [Clear]. Doing so will remove the small window and return to either

the main menu or the battle. See the Controls section for a detailed list of keys that perform game actions.

During the battle, the interface becomes visual. The calculator will render an image to the screen. This screen will always be the base image. This image not only contains a pretty good view of space, but at the bottom of the screen there are various buttons. From left to right: TACT (Tactical Systems Control), STS (Status Report), SNS (Sensors), TRMS (Transporter), MSG (Messenger). The Controls section will discuss these more. Also, hotkeys are available to quickly fire upon enemy ships.



Networking

The networking protocol employed by **Star Trek MP v1.0** is complicated. First off, it is powered by CALCnet 2.2, a calculator linking network packaged into *DoorsCS7.1*. This network is fully automated. If you are a developer, this section discusses CALCnet memory areas and the networking protocol used by the game. If you are not a developer, to the next section, because this will give you a migraine.

CALCnet 2.2 uses 547 bytes, starting at SavesScreen, or memory address \$86EC. The chart below describes the memory areas used by CALCnet 2.2, and are, thus, unavailable for free RAM usage.

Address	Offset	Size	Function
\$86EC	0	2	Do not modify
\$86EE	2	5	Current calc ID (do not modify)
\$86F3	7	5	Receive buffer sender ID
\$86F8	12	2	Receive buffer size word
\$86FA	14	256	Receive buffer data
\$87FA	270	5	Send buffer receiver ID
\$87FF	275	2	Send buffer size word
\$8801	277	256	Send buffer data
\$8901	533	15	Do not modify

Star Trek v1.0 uses a streamlined method of data handling, designed to provide the quickest processing of data received and opening of the receive buffer for another transmission. For this reason, the first byte of a transmission, memory address \$8801, will hold a transmission type byte. This byte will identify to the receiver what type of transmission is being received, allowing it to jump immediately to a routine designed to handle that data, rather than move over a lot more code. The chart on the following page indicates the type bytes and the additional data needed for a transmission of that type, as well as the game's response to that type of data.

Type Byte	Definition	Additional Data	Handling
\$01	#join	8-byte username	-writes sender ID and username to userland server member database. -increases database size; sets Max indicator if memory full or max network members reached. -receiver retransmits a join message to the sender.
\$02	#quit	None	-deletes sender ID and associated data from server member database. -decreases database size; resets Max indicator.
\$03	#position update	12-byte position	-writes sender position into server member database, after corresponding sender ID and username.
\$04	#attack	1-byte weapon type 1-byte weapon level (iff phaser or torpedo)	-triggers damage calculation with respect to weapon type and level, if applicable.
\$05	#text message	n-byte message, 'n' is the length of the message	-causes the MSG button to flash. Pressing the key brings up a window displaying the sender's username and the text.
\$06	#beamed	1-byte quantity	-causes damage to receiver systems. The receiver is not alerted, other than damage to systems. A random number generator is used to determine how often one invader is killed off.

The subroutines of **Star Trek MP v1.0** handle the reading of data out of the CALCnet receive buffers and the writing of data into the CALCnet send buffers. The network interrupt handles the actual transmission of data.

Controls

The dynamic controls of **Star Trek MP v1.0** allow users a near-realistic interaction with the game. The controls are complicated, but easy to discern and utilize.

Starting with the menu screens.

[2nd] : Click on hotspot (text buttons, close button)

[Clear] : Substitutes clicking the close button on a small window

[Arrow Keys]: Move the mouse around the screen

Onto the battle screen.



[Arrow Keys] : Change ship direction

[y=] : Tactical System Control

[Window] : View Status Report

[Zoom] : View Sensor Data

[Trace] : Transporter System Control

[Graph] : Messaging System Control

[2nd] : Firing Mode 1 (phasers)

[Alpha] : Firing Mode 2 (photons)

[Math] : Firing Mode 3 (torpedoes)

[Mode] : Lock onto Target/Switch Target

[*] : Engage warp drive

[/] : Engage impulse drive

Change Ship Direction

Unfortunately, the gaming interface provided does not truly support 3-dimensional motion. Therefore, your ship can only travel left, right, up, down, backwards, or forwards. Pressing an [Arrow Key] will cause your ship to change direction with respect to the direction it is already moving. Thus, if your ship is moving up already, pressing the [Up Arrow] will cause your ship to begin moving backwards (with respect to the starting direction). The ship cannot move horizontally in any direction. Hopefully this will change in a future release, but for now, it is a limitation.

Tactical System Control

This allows you to monitor the status of your ship's shielding systems, and to toggle their status (raise or lower). You can also activate your ship's repair systems from this menu. When active, Repair will restore one health point to each system per second (unless it is destroyed). Repair will not repair itself. This indicator will also flash to alert the player that the shields are failing.

View Status Report

This option compiles a report of what systems have taken damage. This does not include the shields, which are monitored by Tactical System Control, but it does

include Repair. The status report will not include any systems that are in good health. See the Ship Configuration section for a list of all systems and their functions. This indicator will flash to alert the player that a system has taken damage.

View Sensor Data

The sensor can easily be one of the most important parts of the ship. This option allows you to see the status of your immediate area. This indicator will flash to alert the player that another ship is nearby.

Transporter System Control

The transporter allows you to beam five crew members aboard an enemy ship. These invaders will do constant damage to systems, as long as they are present. Periodically, the receiver will kill off an invader. Once all five are killed, damage stops. Using this function requires the sender to lower its shield, making it vulnerable to physical attack by other ships.

Messaging System Control

This option allows you to send a message to another player, a maximum of 255 bytes. You must select the receiver, by username, then type the message. The game pauses while you do this, but the first attack sent while you are in type mode will hit. This indicator will flash if you receive a message from another player.

Weapons System Control

This is your fighting mechanism. There are several modes in which you can fire. They are listed below.

Firing Mode 1 (Phasers)

Phasers are your simplest weapon. They fire off a low-damage energy beam at your enemy ship (not really...they just draw a line, then move a bunch of memory around, but let's be creative). There are two phaser levels. The first deals a maximum of five (5) damage points. The second deals a maximum of ten (10) damage points. You have unlimited phaser power to fire.

Firing Mode 2 (Photons)

Photons are slightly stronger than phasers, but they have only one available level. Photons are a high energy blast. They deal a maximum of fifteen (15) damage points. They are limited and must be purchased using your experience points.

Firing Mode 3 (Torpedoes)

Torpedoes are the strongest types of weapons you can use. They contain both a high energy blast and an explosive charge. There are two levels of torpedoes, standard and Romulan (from the most recent Star Trek movie). The standard torpedoes deal a maximum of twenty (20) damage points. The Romulan torpedoes deal a maximum of sixty (60) damage points. This makes them extremely powerful.

Needless to say, the upgrade is extremely expensive to purchase. See the section on Game Extras.

Targeting

Targeting is crucial to the game. Your ship will not fire unless it has another ship to fire at. You do this by pressing the [Mode] key. Press it repeatedly to select a different target. Targeting requires that the Sensor system be online.

Ship Drives

The ship has two different traveling speeds, warp and impulse. The most commonly used should be impulse. At this speed, the ship moves forward one unit per cycle. However, the map is about 4.3 billion units wide. Warp speed can be used to travel large distances quickly. Warp speed is equivalent to about 65 thousand units per cycle. As a side note, traveling off the map slowly deals damage.

Ship Configuration

Each ship in the game utilizes a standard configuration, which consists of several systems: Warp Drive, Impulse Drive, Shields, Phasers, Photons, Repair, Sensors, Transporter, Generator, or Life Support. Each system is crucial to optimal performance in the game. Each system will function as long as it has health. Once its health is reduced to zero, however, it stops functioning.

Warp Drive

The warp drive is essential to move quickly to distant places in the playing area. It is also essential to escape from battle, in the event that your ship is sustaining damage. Without it, you will likely be destroyed.

Impulse Drive

The impulse drive enables your ship to move at a regular pace amongst the game. It allows you keep up with other players. Without it, your ship cannot move. Thus, it becomes an easy target and has difficulty maintaining a firing distance from other ships moving out of range.

Shields

Disputably the most valuable system, but undeniably valuable, the shields protect your ship from physical damage. The shields lose health as they continue to deflect damage, but just a few extra points of shield health can make a difference.

Phasers

This system allows you to fire phasers. They are your primary weapons, as all other weapons are limited. Without them, your ship is severely weakened.

Photons

This system allows you to fire all types of projectile weapons. They are extremely powerful, and thus, they give your ship most of its firepower. Without this system, you are at a severe disadvantage.

Repair

This system is very important. While active, it runs in the background, restoring health to systems. It will increase the health of each system, except itself, by approximately one point per second. Without this system, your ship is unable to regenerate itself during or after battle.

Sensors

Another crucial system. Not only does it alert you to the presence of an enemy ship, but your sensors allow you to lock onto another ship for firing. Without your sensors, you cannot fire or see danger. *There is a secret key in the game that allows you to fire a scrambling signal at a targeted player. This signal causes that player to lose the position of ALL enemy ships for a certain amount of time, rendering them unable to see or target anyone.*

Transporter

This allows you to send crew members on board an enemy ship to damage its systems, even if their shields are raised. However, it requires your shields to be lowered, which makes you vulnerable. This should therefore be used sparingly, but when used strategically, can be very effective.

Generator

Another valuable system. The generator supplies power to your ship. Without this system, all other systems become unresponsive, except for Repair, which will restore health to the generator.

Life Support

The most crucial system in your ship. Life Support keeps your crew alive in space. The destruction of this system means you lose the game.

Game Extras

You may use experience points, earned in combat, to purchase upgrades and repair packages for your ship. They may be found at <http://clrhome.co.cc/projects/startrek/downloads>.

Credits

A special thank you to the users of Cemetechn and Omnimag, whose support and assistance has made this project possible. A few particular individuals have provided a substantial amount of assistance and, thus, will be credited by name:

Collaboration/Assistance

Christopher “Kerm Martian” Mitchell
DJ Omnimag
Ashbad
Deep Thought
aeTlos
BrownnyTCat
Souvik1997

Debugging Team

Haven’t debugged yet ;)

ⁱ Christopher Mitchell. *DCS7_SDK.pdf*. Chapter 7 CALCnet 2.2. pp. 96-97. 2010
http://cemetechn.net/programs/index.php?mode=file&path=/text/calinfo/dcs_sdk.zip