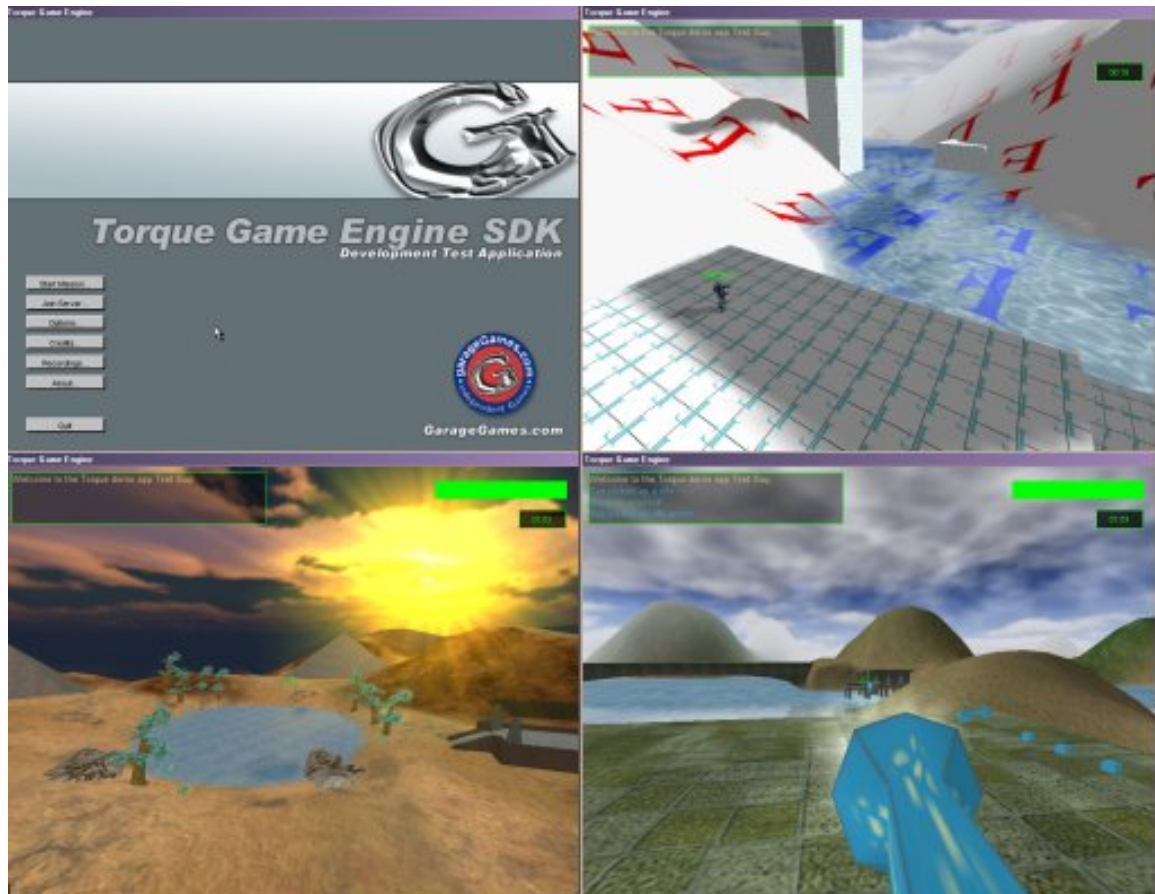


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## Introduction



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## **Preamble**

### **About this guide (Who is this guide for?)**

I purchased my Torque license August 10<sup>th</sup>, 2001. License #1160. I had previously played Tribes™ 2 and was stoked to find out that the engine that powered this awesome game was going to be released under a very reasonably priced license. So, when V12 (the previous name for the Torque engine) was released, I bought it. At the time, I was working with a friend on a 3D engine of our own (Nascent™). We had written and re-written the engine many times. The current version of Nascent™ had lots of jazzy features (Q2 model/animation support, multi-texturing, pseudo-bump mapping, an embedded TCL scripting engine with full access to the C++ core components, a ROAM based terrain engine, game recording and playback, a Limited Physics Engine, Billboards, multi-level collision detection, hierarchical view-culling, , dynamic render scheduling, multiple camera support, yada yada yada...). The problem was that even with all the features we had implemented, there were many more we needed to make Nascent™ a well-rounded and functional game engine. To be honest, we didn't have a real game plan or a concrete feature list. We often added things because they were cool or we 'thought' we might use them. Torque offered a fresh start, and the opportunity to focus on game design and content creation instead of the underlying technology.

So what does this have to do with this guide? Patience please, ...

Like I said, I picked up Torque mid-August 2001. As soon as the purchase went through, I downloaded release 1\_1\_0. I poked around and got it to compile, ran the one demo it had, looked at the code and scripts a bit, then put it away. What!? Yes, I put it away. After taking a look at the code and scripts, and the documentation at the time, I put it away. I was overwhelmed by the task of trying to figure out how to make use of the engine, which to be fair was still suffering from some issues (Sierra had required that certain code be stripped out). Knowing my limits, I decided to wait and see how it matured. Meanwhile, more work on Nascent...

... one year later...

A year passed and I returned to the Garage Games site. Wow! These guys had really made some progress<sup>1</sup>. Torque was up to release 1\_1\_2 and the site had forums, resources, member homepages, a cool newsletter, and **DOCUMENTATION**. "This is more like it", I thought to myself. Jumping in head first, I read through the docs, downloaded release 1\_1\_2, and set to work on a simple game. Without boring you further, let me just say that the game was a 3D derivation of a single level in a MUD that I had previously helped administrate. The documentation and resources allowed me to quickly build an island, populate it with buildings, some trees, rocks, a small lake or two, and then to surround it with an ocean. About this time, I had exhausted the easily

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<sup>1</sup> My hat is off to the staff and all the dedicated GG members who put together such a wonderful site, upgraded the code, and provided all kinds of documentation and examples. You guys are awesome!

located data on how to implement game features and started to really dig. Since the forums did not support full text searches, I siphoned off GG site pages over a period of time and built my own indexed copy of the forums locally. I asked for more docs and ways to search for data. (Many other folks asked for the same things.) Improvements were made, but the GG staff were busy with their own games, site maintenance, and the site hardware itself had limitations. So, I got proactive and put together the Torque Notes Page (<http://www.hallofworlds.com/pages/Torque/TorqueNotes/>). I accumulated all my findings and tons of interesting links on this page, but it soon began to sprawl with both topics and content. I realized that what the Torque Engine really needed was a Users' Guide or In-depth Reference.

So, there you have it. This guide, the result of my own need for a better reference, is the culmination of my own game-writing and Torque-using journey. I decided to write this guide in order that others wouldn't have to struggle as I have and to provide myself with an excellent means of really learning about Torque<sup>2</sup>. What are my credentials? Sadly, they are few. I'm an experienced professional in my field, which is Computer Engineering, not Game Design. I don't have any AAA titles under my belt. All I have is the lessons that my previous efforts have taught me as well as the data I researched for this book.

## What this guide contains

In this guide, you should find everything you need to make a simple game, including:

- Basic Training – In this section of the guide, you will learn about the in-game editors and some details about scripting. Armed with this info, you'll be able to create a simple game based entirely on scripts and elements available in the HEAD distribution of Torque.
- Tech School – This chapter takes us to the next step, and discusses the usage of the various (out-of-the-box) mission objects. Additionally, we'll take a look at Torque Script and discuss the features it provides.
- On the Job Training (OJT) – This section is composed of a series of discussions and case studies. There are example missions, code, and scripts to go with the topics.
- Appendices – In addition to the above sections, I have added several appendices including quick references, etc.
  - Scripting Quick Reference
  - Default GUI Elements
  - Default GUI Methods
  - Suggested Reading List
  - More...

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<sup>2</sup> To really learn a subject, try teaching someone else about it.

## **What this guide does not contain**

This guide does not contain a complete reference of every method in the engine. It does not contain details on every script in the standard Torque examples. And, unfortunately, it probably doesn't contain the answer to every question that every person who uses Torque can come up with. My hope is that it contains enough information and is accessible enough that you can answer these 'unanswered' questions on your own.

## **What you should know before reading this guide**

Ah, the fatal question, "What do you, the reader, need to know?"

Need to know:

- To paraphrase Robert Heinlein, "TANSTAAFL, There Ain't No Such Thing As A Free Lunch." This guide is here to help you, but you are going to have to do some real work to learn what it has to tell you.

Helpful to know:

- In the Tech School Section, it will be helpful to understand basic 3D geometry concepts and mathematics. See suggested reading Appendix.

## **Errata and Obtaining Sample Code**

Visit the Hall of Worlds site (<http://www.hallofworlds.com>)

## Style and Naming Conventions

### Style

Throughout this guide, I will attempt to be consistent in the way I label things and express concepts. In order to make this possible, this sub-chapter provides a sort of ‘Rosetta Stone’ to the rest of the guide.

### *Standard Keyboard Keys*

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>
<b>M</b>	<b>N</b>	<b>O</b>	<b>P</b>	<b>Q</b>	<b>R</b>
<b>S</b>	<b>T</b>	<b>U</b>	<b>V</b>	<b>W</b>	<b>X</b>
<b>Y</b>	<b>Z</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>

### *Special Keyboard Keys*

<b><i>ALT</i></b>	<b><i>CTRL</i></b>	<b><i>SHIFT</i></b>	<b><i>TAB</i></b>
<b><i>F1</i></b>	<b><i>F2</i></b>	<b><i>F3</i></b>	<b><i>F4</i></b>
<b><i>F5</i></b>	<b><i>F6</i></b>	<b><i>F7</i></b>	<b><i>F8</i></b>
<b><i>F9</i></b>	<b><i>F10</i></b>	<b><i>F11</i></b>	<b><i>F12</i></b>

### *The Mouse*<sup>3</sup>



Left Mouse Click



Middle Mouse Click



Right Mouse Click

---

<sup>3</sup> Mouse and some of the Miscellaneous icons borrowed from Blender cheat sheet originally produced by staff at ExcellentWhale (<http://blender.excellentwhale.com/>)

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### **Naming Conventions**

Throughout the guide, I will attempt align my naming conventions and terminology with those you will encounter in the official Torque SDK documents and otherwise on the GG site. In the cases where this is not so, I will make it clear that the names/terms in use are of my own invention.

## ***Intro To Torque***

### **What is Torque?**

“The Torque Game Engine (TGE) is a fully featured AAA game engine with award winning multi-player network code, seamless indoor/outdoor rendering engines, state of the art skeletal animation, drag and drop GUI creation, a built in world editor, and a C-like scripting language. Unlike most commercial game engines, as part of the low cost license, you receive all C++ source code to the engine, so you can make any additions you need for your game.

Torque is a complete cross platform gaming solution which greatly increases your money making ability without additional development costs. Create your product on the PC, then port to Mac or Linux within hours. To further reduce development costs, support of Open Source and free tools are at the heart of the Torque development philosophy. For instance, Quark is the preferred level and building development solution, while MinGW and GCC compilers are supported as well.

The Torque Game Engine started life as the technology behind Dynamix/Sierra/Vivendi’s products Tribes, Starsiege, and Tribes 2, and is an industry proven engine. It is currently being used by thousands of developers around the world and will have many more shipping titles such as Marble Blast, Orbz, and Think Tanks by the end of 2002.”

-Garage Games Site

- “Torque supports many industry standard content creation tools for 3D modeling and animation, and comes standard with exporters for 3D Studio Max on the high end and Milkshape on the low end. Community members are creating exporters for other popular 3D modeling programs such as Lightwave, Maya, and Blender.
- Buildings and levels are created in industry standard free programs Quark and Worldcraft.
- *TorqueEdit* is a powerful terrain generation and object placement toolkit for easily building game scenes and structure. This editor gives you control over all elements in your game from a graphical viewpoint.
- *TorqueGUI* is an easy to use, drag and drop graphical user interface creator. Don’t spend time stressing over small changes in your interface. Exercise your creativity without breaking your development budget.
- *TorqueScript* is an easy to use C++ like scripting language that ties all of the various elements of your game together. Most of your game can be programmed in TorqueScript, with engine additions such as physics or intense AI coded in C++ to be called from script.”

-Garage Games Site



## Why Should I Use Torque?

**Educational:** One of the best ways to learn programming is to read code written by other developers. And if you are going to read code you might as well have fun and read game code and learn a few tricks in the process.

**Resume Building:** MOD and/or modify the engine to show off your skills to future employers.

**MOD Makers:** How many times have you got stuck trying to MOD other engines because it did not support feature X? Now you have the source and can easily add that feature yourself and truly differentiate your MOD from the rest.

**To Make Great Games!** That's what we all live for, so do it. This is an unprecedented opportunity to build your game using an industry proven game engine that rocks! ..."

-Garage Games Site

One of the beauties of the Torque Engine is that you don't have to use it to make games. "What's that, sou say!" I repeat, you do not have to use the Torque Engine to make games. With the features included in this engine, you can just as easily make a variety of professional, educational, or 'your category here' products.

Of course, you must abide by the End User's License Agreement (EULA), but once you have licensed the engine, the terms of the agreement are pretty free about what you can create. The only real limitation is your own imagination. So, let's get kickin' and talk about some things you'll need to know.

## How To Obtain Torque (Licensing Torque)

OK, so you're sold. You've bought this book (or perhaps you're browsing the Lite version online right now). Whatever the case, you've decided that this Torque thing sounds like a good deal. To get your hands on this state-of the art engine, simply do the following:

1. Visit the Garage Games Web Site: <http://www.garagegames.com>
2. Follow the links to the 'Featured Products' page.
3. Add Torque to your cart.
4. Click 'Checkout'<sup>4</sup> and pay.

## Torque Requirements

See GG site (<http://www.garagegames.com>)

## Getting Started

### Taking it one step at a time ...

Upon first picking up the Torque engine, you may be somewhat overwhelmed. If asked, most Garage Gamers will probably admit that they were too. In fact, I was so overwhelmed that I almost waited an entire year after purchasing Torque to really dig in and start using the engine. The fact is, this engine and all the associated files are HUGE. Just doing a quick count on the HEAD version of the code brings up the following gross (counts may vary) metrics:

- 1541 Source files containing 644k lines (427k lines of code, and 217k lines of comments)
- 213 Script files containing 32k lines of TorqueScript, (19k of TorqueScript, and 13k lines of comments)

No matter how you twist it, turn it, chop it, or sort it, Torque is big. Big, not only in raw size but in features. However, approached with an inquisitive mind, and with the understanding that nothing is free, especially an understanding of the ins and outs of this engine, you can master Torque.

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<sup>4</sup> While you're here, check out the games that are currently available. They are cheap and fun to play, so why not add one or two to your cart. Help support your Garage Games Community, a member of which you are about to become!

## **The Garage Games Community and Resources**

I've stated this in more than one forum and I must state it here, the Garage Games community is excellent. I continue to be impressed on a daily basis by how well attended the forums are and how quickly people give answers to questions. The GG site provides several 'resources':

- Forums – These are areas where you can post questions, ideas, general complaints, etc. To date, there have been literally tens of thousands of posts. And, last count (not including forums dedicated to released games) there were 12 major forum categories, containing 64 sub-categories.
- Resources – These are community submitted items including scripts, code, web links, books that are good to read, accumulated references, and more. These resources are organized by date and rating (among other categories).
- News – The GG site has a news page and a Newsletter. Very cool.
- Developers Pages – Torque License owners and registered GG members have mini-pages on the GG site where they post data about themselves. Its searchable, of course.

### **What You Need Before You Start**

<http://www.garagegames.com/docs/torque/general/pt01.php>

### **Checking Out The Latest Torque**

<http://www.garagegames.com/docs/torque/general/ch02.php>

### **Building Torque**

<http://www.garagegames.com/docs/torque/general/ch03.php>

### **Running the Sample Missions**

<http://www.garagegames.com/docs/torque/general/ch03s04.php>