Quake

- first-person shooter computer game that was released by id Software on June 22, 1996
- it was the first game in the popular Quake series of computer and video games
- further reading ⟨`http://en.wikipedia.org/wiki/Quake`⟩

Quake

- the majority of programming work on the Quake engine was done by John Carmack
  - but specialist program performance optimization was done by Michael Abrash
- some of the critical routines were programmed in assembly language
  - music and sound effects were written by Trent Reznor, of Nine Inch Nails
  - within the game, the ammo box for the nailgun has the Nine Inch Nails logo on it
  - Quake was released as the Internet was commercially comming of age
  - Id Software realised that the future of gaming was on the Internet (perhaps the first big games software house to have this vision)

Quake 1 Timeline

- February 24 1996 Id releaseed QTest
  - a technology demonstration of quake 1 engine
  - allowed people to examine data files and generate minor map mods before the game was officially released
- June 22, 1996 Id released shareware Quake 1
  - episode 1 maps released in shareware form
  - despite assembly language speed improvements few computers were able to use all features (lighting)
- July 22, 1996 Id released full Quake 1 with all maps

VQuake

- at the end of 1996, id Software released VQuake, a port of the Quake engine to support hardware accelerated rendering on graphics cards using Rendition Vérité
- VQuake offered numerous visual improvements over the original software-rendered Quake
  - full 16-bit color, bilinear filtering (reducing pixelation)
  - improved dynamic lighting and even optional anti-aliasing
- consumer 3D acceleration was in its infancy
  - there was no standard 3D API for the consumer market
  - after completing VQuake, John Carmack vowed never to write a proprietary port again, citing his frustration with Rendition’s Speedy3D API

QuakeWorld

- was released on December 17, 1996
  - improved the quality of online play
  - significantly revamped network code including the addition of *client-side prediction*
- the original Quake's network code would not show the player the results of his actions until the server sent back a reply acknowledging them
  - if the player attempted to move forward, this client would send the request to move forward to the server, and the server would determine whether the client was actually able to move forward or if he ran into an obstacle, such as a wall or another player

QuakeWorld

- server responds to the client, and only then would the client display movement to the player
  - fine on a high throughput network with very low latency connection
  - not good on a slow Internet link
  - now refered to as `NetQuake`

Client side prediction (in QuakeWorld)

- client side prediction allowed players to see their own movement immediately without waiting for a response from the server
  - `QuakeWorld`'s network code allowed players with high-latency connections to control their character's movement almost as precisely as when playing in single-player mode
  - netcode parameters could be adjusted by the user, so that QuakeWorld performed well for users with low latency
- however the tradeoff was that sometimes other players or objects would no longer be quite where they had appeared to be
  - sometimes a player would be pulled back to a previous position when the client received a late reply from the server which overrode movement the client had already previewed
  - known as "warping"

Implications of cheating by modifying the Quake 1 engine

- further reading ⟨`http://www.catb.org/~esr/writings/quake-cheats.html`⟩

GLQuake and WinQuake

- 22 January 1997 saw the release of `GLQuake`
  - designed to use the OpenGL 3D API to access hardware 3D graphics acceleration cards to rasterize the graphics, rather than having the computer's CPU fill in every pixel
  - yielded higher framerates, higher resolution modes and texture filtering
  - improved image quality
  - primitive reflections, transparent water, and even rudimentary shadows
- John Carmack controversially ignored Direct3D, opting instead to continue supporting OpenGL
  - partly due to his bad experience with proprietary APIs
  - WinQuake used OpenGL
- there were many ports of Quake to various consoles and platforms

Quake engine genealogy

- Quake Family Tree ⟨`http://en.wikipedia.org/wiki/Image:Familytree11.png`⟩

Source code and legacy

- the source code of the Quake and QuakeWorld engines was licensed under the GPL in 1999
  - the id Software maps, objects, textures, sounds and other creative works remain under their original license
  - the shareware distribution of Quake maps is still freely redistributable and usable with the GPLed engine code
  - only 1 of 4 maps present and no deathmatch maps released
- October 11, 2006, John Romero released the original map files for all of the levels in Quake under the GPL

Gameplay

- single player
- multiplayer
- deathmatch

Quake Engine

- Quake engine
- popularized several major advances in the 3D game genre
  - used 3D models for players and monsters instead of 2D sprites
  - the world is a true 3-dimensional space rather than a 2-dimensional map with height information which is then rendered to 3D
  - previous 3D games such as Duke Nukem 3D, Doom and Wolfenstein 3D
    - sometimes called 2.5D games
  - used a restricted-view mathematical trick when rendering their 3-dimensional view. This allowed a true 3D view, but only when looking straight-ahead
  - illusion breaks when you look up and down in those games

Quake Engine

- Quake also incorporated the use of lightmaps and 3D light sources

Quake Engine

- Quake by default used the keyboard to turn left and right and move forward and backward
  - this produced awkward movements
  - difficult to configure the mouse
  - a 2.5D game as enemies rarely attacked you unless you were on the level!
- was also one of the first games to support 3D hardware acceleration