

# Chapter 58 - The IE Runtime Layer

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The runtime layer is the part of the port that makes a large C programme feel like a native IE programme.

It starts execution, clears memory, installs service functions, reads packed data, writes terminal output, reports fatal failures, and keeps the high memory layout away from the low MMIO apertures.

## 58.1 Memory Shape

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The checked port uses a simple rule: keep the loaded game high, keep device apertures low, and reserve known ranges for packed data and texture storage.

Region	Purpose
\$00001000	Initial M68K image entry and low loader space
Below \$000A0000	Low RAM before the first device aperture
\$00600000	Asset staging and pack header area
\$01000000 upward	Packed data window in the self-contained image
\$08000000 upward	Voodoo texture store used by the port
\$10000000 upward	High-linked game image

The exact addresses are less important than the discipline. Large code, large data, asset staging, texture storage, stack, and MMIO must not fight for the same space.

## 58.2 Startup

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The small loader begins at the M68K entry address. It either finds a self-contained pack already in memory or reads the game image through the File I/O device, copies it to its linked high address, and jumps to it.

The game runtime then performs the normal bare-machine duties:

- Clear BSS.
- Preserve initialised data.
- Install graphics, audio, input, time, asset, save, and log services.
- Publish simple boot-status words for smoke checks.
- Enter the game loop.

When a fatal error occurs, the runtime writes a visible fatal marker in RAM, prints a terminal message, and halts the M68K CPU.

## 58.3 File And Pack Access

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The pack format exists so the programme can be self-contained. A table of contents names each asset and gives its offset and size. Multi-byte pack fields are big-endian, matching the M68K side of the port.

If the pack is present, assets are served from RAM. If it is not present, the same asset contract can read through the File I/O device. The game core sees the same service either way.

## **58.4 The General IE Lesson**

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A serious IE programme needs a runtime contract before it needs clever effects. Decide where code, data, stack, assets, textures, status words, and MMIO live. Then make the rest of the programme use that layout through named services.