



Figure 9-3: The x86-64 programming model

Switching Modes

Full binary compatibility with existing x86 code, both 32-bit and older 16-bit flavors, is one of x86-64’s greatest strengths. x86-64 accomplishes this using a nested series of *modes*. The first and least interesting mode is *legacy mode*. When in legacy mode, the processor functions exactly like a standard x86 CPU—it runs a 32-bit operating system and 32-bit code exclusively, and none of x86-64’s added capabilities are turned on. Figure 9-4 illustrates how legacy mode works.