```
Toggle HUD      H

Restart  Ctrl+R
Quit         q
```

Prolific open source developer Nick Black introduces character graphics and Text User Interface design. The examples use the modern Notcurses library, but many of the lessons are applicable to TUI programming using NCURSES or Newt. Topics include Unicode (current through 2020's Unicode 13.0), handling input from keyboards and mice, effective use of 24-bit TrueColor and α-blending, 8-bit palette-indexed PseudoColor, rendering images and streaming video, construction of reusable TUI widgets, and more. These concepts are developed with thorough examples. All code is available online from the book's GitHub repository.

Nick Black holds a fistful of degrees from the Georgia Institute of Technology. Besides toiling in the code mines of NVIDIA and Google, he has contributed to well over one hundred open source projects, and done a few startups.

```
88               88               88                                                                88                        88
88               ""               88                        ,d                                      ""                        88
88                                88                        88                                                                88
88    ,d8         88    ,adPPYba,  88  8b,dPPYba,  MM88MMM    ,adPPYYba,  8b,dPPYba,    88    ,adPPYba,  88
88                88P'    `"8a  88  88P'    `"8a  88        ""     `Y8  88P'    `"8a  88  a8"     ""    88
476        0.00s trans   88  88         88  88        ,adPPPPP88  88         88  88  8b            888
147        3.05s intro   88  88         88  88,       88,    ,88  88         88  88  "8a,   ,aa  88,
177        2.93s xray    88  88         88  "Y888     `"8bbdP"Y8  88         88  88  `"Ybbd8"'  88

     888P
```