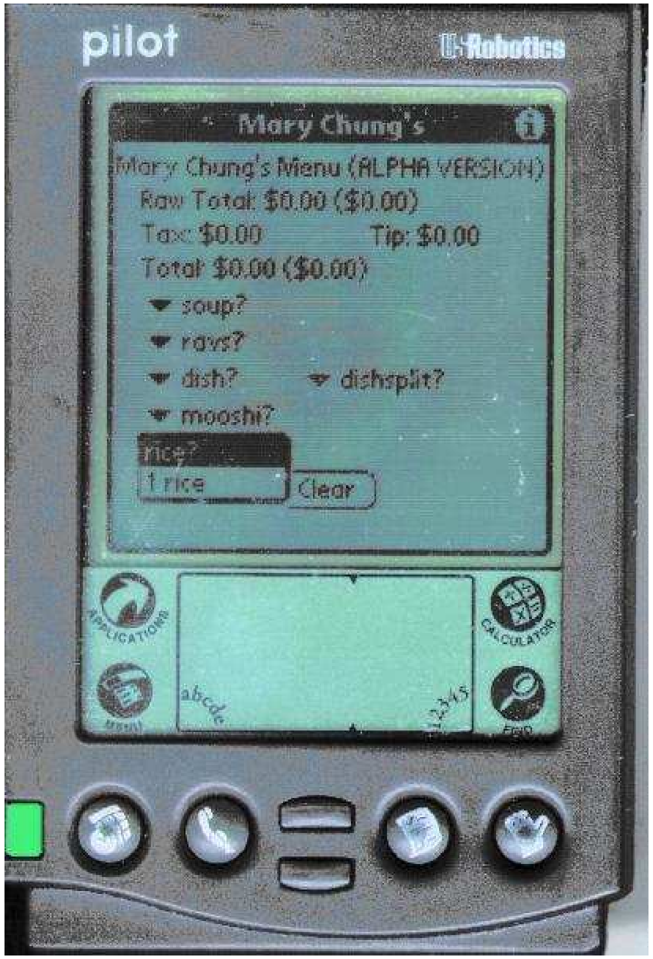
Programming Model

- CPU: Dragonball 68328 (cpu32)
- 32 bit, little endian

`#pragma pack(2)`

- RAM 128k..1M, 1M/2M ROM

Mary Chung's Menu app



Mary Chung's Menu (ALPHA VERSION)

Raw Total: $0.00 ($0.00)

Tax: $0.00 Tip: $0.00

Total: $0.00 ($0.00)

GUI

- Mac heritage
- resource compiler
- dynamic resources

```
FORM # AT (coords)
USABLE, MODAL, HELPID #, MENUID #
TITLE "Mary Chung’s"
LABEL "Mary Chung’s Menu" 2000 CENTER 15
POPUPTRIGGER "soup?" ID 3000 AT (coords) LEFTANCHOR
LIST "soup?" "suan" "wonton" "H&S" "H&S w/wonton"
"Egg Drop" ID 3001 AT (coords) VISIBLEITEMS 6 NONUSABLE
POPUPLIST ID 3000 3001
```

Setup

```
DWord PilotMain(Word cmd, Ptr cmdPBP, Word launchFlags)
{
  EventType e;
  short err;
  FormPtr fp = 0;
  if (cmd != sysAppLaunchCmdNormalLaunch) { /* 0 */
    return 0;
  }
  FrmGotoForm(1000);  /* main page */
```

Main Loop

```
while(1) {
  EvtGetEvent(&e, 100);
  if (SysHandleEvent(&e)) continue;
  if (MenuHandleEvent((void *)0, &e, &err)) continue;
  switch (e.eType) {
    case frmLoadEvent:
      FrmSetActiveForm(fp=FrmInitForm(e.data.frmLoad.formID)); break
    case frmOpenEvent:
      FrmDrawForm(FrmGetActiveForm()); break;
    case menuEvent:
      FrmAlert(1000); break; /* alert 1000 */
    case appStopEvent:
      return 0;
    default:
      FrmHandleEvent(FrmGetActiveForm(), &e); break;
```

Handle Popups

```
      case popSelectEvent:
        /* this one *actually* handles the popup menu, so recalc here */
        FrmHandleEvent(FrmGetActiveForm(), &e);
        updatePopup(fp,&e);
        break;
      case ctlSelectEvent:
        FrmHandleEvent(FrmGetActiveForm(), &e);
        {
          if (e.data.ctlSelect.controlID == 4100)
     clearEntries(fp);
        }
      }
    }
    return 0;
  }
```

Popup

```
static void updatePopup(FormPtr fp, EventType *e)
{
  Word lid = e->data.popSelect.listID;
  ListPtr lp = FrmLookupPtr(fp,lid);
  int pr, oldpr;
  switch (lid) {
  case 3251:   /* dishsplit */
    oldpr = dishprice / dishsplit;
    dishsplit = lp->currentItem;
    if (dishsplit == 0) dishsplit = 1;
    pr = dishprice / dishsplit;
    break;
```

Memory Management

- stack size set in pref resource
- no malloc
- database pages
- read-only pages
- calls limited to 32k

Communications

- **direct serial**

```
error = SysLibFind("Serial Library", &SerialRef);
if (error) ErrDisplay("Error trying to load the serial library");
error = SerOpen(SerialRef, 0, Baud);
if (error) ErrDisplay("Error serial open");
error = SerReceiveCheck(SerialRef, &numBytes);
  if (error) ...
error = SerReceive(SerialRef, buffer, numBytes, -1);
```

- **conduits**
- **interface to existing programs (money extract)**

Event Management

- SysHandleEvent
- NullEvent
- frmLoadEvent
- menuEvent
- FrmHandleEvent
- Search

Debugging

- **Xcopilot**
- **gdb**

```
target pilot /dev/cua0
```