Goals of Presentation

Class Data To Date (separate handout; done)
Discuss Chapter 5 and Third Exercise
Lecture (Watts Humphrey's material)
PROBE Review
Assignment & Exercise Details
  • Reading
  • Standards
  • Spreadsheet 4S
Discussion Chapter 5 & Third Exercise

Identify points as Chapter, Report R3, or Spreadsheet Programming Exercise S3

Discussion Chap. 5 & 3rd Exercise (cont.)

Identify points as Chapter, Exercise R3, or Programming Exercise
Proposed terminology relative to Excel spreadsheet "Objects":  
"domain" Object, Object LOC, Method, or Method LOC?

• Object: [because we've been adding new rows of data] Data "Column", Results Column, Header Rows (data & results), Results Rows, Charts

• Method for Data Column: summary function(s) below the column; at least one LOC per function

• Method for Results Column:
  – each/any intermediate function evaluation columns, usually hidden
  – at least two lines per method: first calc row, and first repeated calc row; more if more needed for first repeatable calculation

Proposed Terminology: Excel Spreadsheet "Objects"

"domain" Object, Object LOC, Method, or Method LOC?

• Results Rows Methods:
  – each/any intermediate function evaluation columns, usually grayed and to the right
  – one line per method

• Chart methods:
  – each series of data, each trend lines, …

• Chart have types:
  – Simple (including multiple data series of the same type) or Combo or …
Agenda

Discuss Chapter 5 and Third Exercise

⇒ Watts Humphrey's Material ⇐

LOC/Method DB Example Example

Assignment & Exercise Details
LOC/Method DB Example

Setting up Standard Component data
• Histogram of 98 C++ Methods
• Log-Normal Distribution of 98 C++ Methods

Size Ranges for Methods
• Overall size ranges for 98 C++ Methods
• Size Ranges for C++ Object Types (LOC/Method)

Calculating Estimated Program size
• Estimated Object LOC vs Actual Program LOC
• Linear Regression of Estimated Object LOC vs Actual Program LOC

1 "Estimating with Objects - Part IV", Object Currents, October, 1996
© 1999 A. Winsor Brown BES/MSEE 599s99PPMP-LWKiv0.doc 1.1 - 07/21/99
Log-Normal Distribution of Methods' LOC

![Histogram of LOC](image)

**Log-Normal Distribution of Methods' LOC**

Proxies' Methods' LOC Size Ranges

Very Small \[\ln(\text{LOC})\] = Average _ln(LOC) - 2*StdDev _ln(LOC)

\[= 2.651 - 2*0.805 = 1.041\]

Very Small \[\text{LOC} = \exp(1.040) = 2.831\] LOC

Size Ranges for 98 C++ Methods

<table>
<thead>
<tr>
<th>Value</th>
<th>LOC</th>
<th>\ln(LOC)</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>19.857</td>
<td>2.651</td>
<td>14.166</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>18.832</td>
<td>0.805</td>
<td>2.237</td>
</tr>
<tr>
<td>Very Small</td>
<td>-17.808</td>
<td>1.041</td>
<td>2.831</td>
</tr>
<tr>
<td>Small</td>
<td>1.025</td>
<td>1.846</td>
<td>6.333</td>
</tr>
<tr>
<td>Medium</td>
<td>19.857</td>
<td>2.651</td>
<td>14.166</td>
</tr>
<tr>
<td>Large</td>
<td>38.690</td>
<td>3.456</td>
<td>31.691</td>
</tr>
<tr>
<td>Very Large</td>
<td>57.522</td>
<td>4.261</td>
<td>70.896</td>
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</table>
Size Ranges for Proxy Types (LOC/Method)

Size Ranges for C++ Object Types (LOC/Method)

<table>
<thead>
<tr>
<th>Category</th>
<th>Very Small</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calc.</td>
<td>2.34</td>
<td>5.13</td>
<td>11.25</td>
<td>24.66</td>
<td>54.04</td>
</tr>
<tr>
<td>Data</td>
<td>2.60</td>
<td>4.79</td>
<td>8.84</td>
<td>16.31</td>
<td>30.09</td>
</tr>
<tr>
<td>I/O</td>
<td>9.01</td>
<td>12.06</td>
<td>16.15</td>
<td>21.62</td>
<td>28.93</td>
</tr>
<tr>
<td>Logig</td>
<td>7.55</td>
<td>10.98</td>
<td>15.98</td>
<td>23.25</td>
<td>33.83</td>
</tr>
<tr>
<td>Setup</td>
<td>3.88</td>
<td>5.04</td>
<td>6.55</td>
<td>8.53</td>
<td>11.09</td>
</tr>
<tr>
<td>Text</td>
<td>3.75</td>
<td>8.00</td>
<td>17.07</td>
<td>36.41</td>
<td>77.66</td>
</tr>
</tbody>
</table>

Size Estimation: Regression Actual vs Est.

<table>
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<tr>
<th>Prog#</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Sum</th>
<th>Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E LoC</td>
<td>130</td>
<td>650</td>
<td>99</td>
<td>150</td>
<td>128</td>
<td>302</td>
<td>95</td>
<td>945</td>
<td>368</td>
<td>961</td>
<td>3828</td>
<td>382.8</td>
</tr>
<tr>
<td>A LoC</td>
<td>186</td>
<td>699</td>
<td>132</td>
<td>272</td>
<td>291</td>
<td>331</td>
<td>199</td>
<td>1890</td>
<td>788</td>
<td>1601</td>
<td>6389</td>
<td>638.9</td>
</tr>
</tbody>
</table>

β₀ = -22.5

β₀ = 1.73
Agenda

Discuss Chapter 5 and Third Exercise

Watts Humphrey's Material

LOC/Method DB Example Example

⇒ Assignment & Exercise Details ⇐

Assignment & Exercise Details

Reading Plus

Scan Appendix A1

Read "last half of" Chapter 5

• Diversion to Appendix A7
• Diversion to Appendix A8
Assignment & Exercise Details

Reading Plus (cont.)

Read process & exercise specifications in App. C & D

- PSP1 Process: Appendix C3, pgs 617-623
- PSP1 Process Scripts: Tables C30..C33, pgs. 662..665
- PSP1 Project Plan Summary & Instructions – Table C34..C35, pgs 677..678
- Test Report Template & Instructions – Table C37..C38, pgs 681..682
- Size Estimating Template & Instructions – Table C39..C40, pgs 683..685
- PROBE Estimating Script: Table C36, pgs 679-680

Assignment Kit #4S — Separate Handout