Homework 2 – Estimating / 50

**Instructions**

* Submit as one Word document via email
* Document Name shall be: Homework3-<LastName,FirstName>
	+ Example *Homework3-Snerfle,Burf*
* Email Subject Line shall be: CSCI3350-<Your Section Number>:Homework3
	+ Example *CSCI3350-001:Homework3*
* Due: 26 Sept, via email prior to noon

**Questions**

1. Clearly distinguish between accuracy and precision with respect to an estimation model. (2 pts)
2. You are a software engineer at Burf’s Software Shysters. Your manager announced that your next product would consist of 19 files, of which 3 are temporary files and 6 are transaction files. There are 19 input screens, 21 output screens, 43 error dialog screens, and 87 processes.
Using the FFP metric, determine the product size. (2 pts)
3. At Burf’s Software Shysters, the constant d has a value of $719. What cost estimate does the FFP metric predict? (2 pts)
4. The product of problem 2 and 3 was recently completed with a total cost of $122,800. What does this tell you about the productivity of your development team, as compared to Burf’s Software Shysters as a whole? (2 pts)
5. A target product has 9 simple inputs, 4 average inputs, and 5 complex inputs. There are 46 average outputs, 11 simple inquiries, 7 average master files, 6 simple interfaces, 8 average interfaces and 13 complex interfaces. Determine the unadjusted function points (UFP). (2 pts)
6. If the total degree of influence for the product in problem 9 is 41, determine the number of function points. (2 pts)
7. The analysts in your group have estimated another project to have 1165 function points. Using the heuristics from Caper Jones, estimate the
	1. The number of source code statements for a procedural implementation language,
	2. The number of test cases required,
	3. Total lifecycle errors,
	4. The development schedule ,
	5. The number of development personnel needed,
	6. The level of effort,
	7. The number of maintenance programmers needed, and
	8. The number of years the product will be used
8. Suppose that you have estimated that an application has a total of 44 classes. You know that your organization has a productivity constant of 18.3. Using the Lorenz and Kidd model estimate the number of man-days required to complete the project. (2 pts)
9. Burf’s Software Shysters has compiled the following data from their past contracts.

|  |  |
| --- | --- |
| Size (KLOC) | Effort (man-months) |
| 104.09 | 80.19 |
| 9.53 | 5.99 |
| 89.47 | 110.34 |
| 27.77 | 21.72 |
| 8.49 | 5.94 |
| 38.22 | 37.08 |
| 91.80 | 86.43 |
| 42.29 | 15.45 |
| 64.77 | 58.67 |
| 65.75 | 44.12 |
| 86.46 | 92.65 |
| 91.20 | 60.50 |
| 44.95 | 29.92 |
| 40.31 | 49.56 |
| 97.29 | 105.21 |
| 30.33 | 37.68 |
| 25.92 | 23.84 |

Assuming a simple static effort as a function of size model of the form

Using the technique demonstrated in class,

* 1. Determine the values for *A* and *B* , analytically. (4 pts)
	2. Create an Excel Chart showing the data with an overlay of the fit. (4 pts)
1. You have been asked to prepare a bid for an upcoming project based upon the following labor categories for your company:

|  |  |  |
| --- | --- | --- |
|  | Level | Hourly Rate |
| Technical Manager | 3 | $76.92 |
|  | 2 | 57.69 |
|  | 1 | 45.67 |
| Software Engineer | 4 | 86.54 |
|  | 3 | 72.12 |
|  | 2 | 57.69 |
|  | 1 | 48.08 |
| Programmer | 4 | 62.5 |
|  | 3 | 48.08 |
|  | 2 | 38.08 |
|  | 1 | 28.85 |
| Support | 2 | 19.23 |
|  | 1 | 13.46 |

* 1. Management has provided the following estimates for personnel categories

|  |  |  |
| --- | --- | --- |
|  | Level | Billable Man Years |
| Technical Manager | 2 | 2 |
| Software Engineer | 4 | 2 |
|  | 3 | 4.1 |
|  | 2 | 5.6 |
|  | 1 | 6.3 |
| Programmer | 4 | 4.2 |
|  | 3 | 3.7 |
|  | 2 | 12.1 |
|  | 1 | 6.2 |
| Support | 2 | 4.4 |
|  | 1 | 4.5 |

Given that a Man Year is 2080 hours and employees receive 3 weeks paid vacation per year, 10 paid holidays per year, and 12 day of sick leave per year, calculate the Total Direct Labor Dollars. (2 pt.)

* 1. The Overhead Rate for your company is 1.09. Calculate the Overhead Costs. (2 pt.)
	2. Management estimates that $8,500.00 will be spent for Document preparation, $51,965.00 for consultants, and $236,899 for the purchase of hardware. Calculate the total of Other Direct Costs. (2 pt.)
	3. What is the Total Project Cost?(2 pt.)
	4. Given a fee rate of 6.6%, what is the Total Fee? (2 pt.)
	5. What is the Total Project Price? (2 pt.)