Muhammad Umar Khan 10619
Hamza Akhter M. Khan 10870

Software Engineering: 1ST MILESTONE

FP Calculation:

Number of external inputs (EIs):

Play/Pause Function (1), Alan Button Tap (1), Alan Voice Input (1), Side Bar swipe (1) , Song Card Swipe (1)

Number of external outputs (EOs):

Song Playback (1), Alan Bot Replies (1), Alan Track Play (1), Show All Song Titles/Pictures (1), Change Tracks (1)

Number of external inquiry (EQs):

Tap to play particular track from Web (1), Alan searching for commands in Alan API (1), Alan Track Search (1), Get track image/title from Web for sidebar and main menu (1), Alan Track Play (1)

Number of Internal Logical Files (ILFs):

System Configuration File (1)

Number of external interface files (EIFs):

Alan API (1), Music Streaming Website (1), Web for Track image (1)

Information Domain Values	Count	Weighing Factor			FP COUNT
		Simple	Average	Complex	
Number of external inputs (EIs)	5	3	4	6	5x3 = 15
Number of external outputs (EOs)	5	4	5	7	5x4 = 20
Number of external inquiry (EQs)	5	3	4	6	5x4 = 20
Number of Internal Logical Files (ILFs)	1	7	10	15	1x7 = 7

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Number of external interface files (EIFs)	3	5	7	10	3x5 = 15
ΣFP count (Total)					77

- Does the system require reliable backup and recovery? 2
- Are data communications required? 2
- Are there distributed processing functions? 3
- Is performance critical? 4
- Will the system run in an existing, heavily utilised operating environment? 4
- Does the system require on-line data entry? 3
- Does the on-line data entry require the input transaction to be built over multiple screens or operations? 3
- Are the master files updated online? 2
- Are the inputs, outputs, files or inquiries complex? 3
- Is the internal processing complex? 2
- Is the code designed to be reusable? 5
- Are conversion and installation included in the design? 2
- Is the system designed for multiple installations in different organisations? 5
- Is the application designed to facilitate change and ease of use by the user? 4

FP = count total x (0.65 + 0.01 x $\sum Fi$)

FP = 77 x (0.65 + (0.01 x 44))

FP = 77 x (0.65 + 0.44)

FP = 77 x (1.09)

FP = 83.94 = 84

LOC Calculation using FP:

One FP translate 60 LOC

84X60 = 5040 LOC or 5.04KLOC

12FP produced one person-month effort

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84/12 = 7 person-month effort

FP Based COST Estimation

Historical data indicates the organization can produce 7 FP/pm

Labor rate is $ 2500/month

Cost / FP = 2500/7 =$ 357.00

Hence the cost of the project is

$\qquad$ = ΣFP count * [0.65 + .01 * ΣFi]

$\qquad$ = 77 * (0.65 + 0.01 * 44)

$\qquad$ = 84 * $357 = <mark>$29,988</mark>

Hence the effort of the project is

$\qquad$ = 84 / 7 = 12 person/months

COCOMO Calculation:

The basic COCOMO equation for effort (E) in staff-months (SM) is:

Effort (SM) = $2.4(KLOC)^{1.05}$ = $2.4(5.04)^{1.05}$ = 2.4(5.46452) = 13.11 = 13 staff-months

Development time (TDEV):

TDEV = $2.5(13)^{0.38}$ = 2.5(2.65) = 6.62 = 7 months

The average number of staff members (S):

Staff = Effort/TDEV = 13 staff-months/7 months = 1.85 = 2 staff members on average

The productivity rate (P):

Productivity = Size/Effort = 5040 LOC/ 13 staff-months = 388 LOC/staff-month

LOC Based COST Estimation

Functions	Estimated Loc
User interface and control	600

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Alan API	400
Radio controlling/Functionality	300
External links file (mp3)	200
Design analysis modules	500
Peripheral control	200

Historical data indicates the organization can produce 420 LOC/pm

Labor rate is $ 6000/month

Cost / LOC = 22000/420 =$ 14.00

Hence the cost of the project is

= (600 + 400 + 300 + 200 + 500 + 200)/420

= $2200* $14 = $30,800

Hence the effort of the project is

= 2200/ 420 = 5 person/months