

باسمه تعالی

## پروژه حسابداری خوابگاهی

محاسبه‌ی FP

نوع محاسبه fp: توسعه نرم‌افزار به طور کامل

### نیازمندی‌های عملکردی:

راهنما:

EI:

Files Type Referenced (FTR)	Data Elements (DET's)		
	1-4	5-15	Greater than 15
Less than 2	Low (3)	Low (3)	Average (4)
2	Low (3)	Average (4)	High (6)
Greater than 2	Average (4)	High (6)	High (6)

EO:

File Types Referenced (FTR)	Data Elements		
	1-5	6-19	Greater than 19
less than 2	Low (4)	Low (4)	Average (5)
2 or 3	Low (4)	Average (5)	High (7)
Greater than 3	Average (5)	High (7)	High (7)

EQ

File Types Referenced (FTR)	Data Elements		
	1-5	6-19	Greater than 19
less than 2	Low (3)	Low (3)	Average (4)
2 or 3	Low (3)	Average (4)	High (6)
Greater than 3	Average (4)	High (6)	High (6)

ILF:

Record Element Types (RET)	Data Elements		
	1 to 19	20 - 50	51 or More
1 RET	Low (7)	Low(7)	Average (10)
2 to 5 RET	Low (7)	Average (10)	High (15)
6 or More RET	Average (10)	High (15)	High (15)

EIF:

Record Element Types (RET)	Data Elements		
	1 to 19	20 - 50	51 or More
1 RET	Low (5)	Low(5)	Average (7)
2 to 5 RET	Low (5)	Average (7)	High (10)
6 or More RET	Average (7)	High (10)	High (10)

### ایجاد گروه

EI	FTR	1: group	FP = Low(3)
	DET	4: group name input, group image, group image add button, submit button	
EO	FTR	1: group	FP = Low(4)
	DET	1: group invite link	
ILF	RET	2: group, user	FP = Low(7)
	DET	5: group_id, user_id, balance, group_image, creation_date	

### عضویت در گروه

EI	FTR	1: group	FP = Low(3)
	DET	2: group link input, submit button	
ILF	RET	2: group, user	FP = Low(7)
	DET	3: group_id, user_id, balance	

### ویرایش گروه

EI	FTR	1: group	FP = Low(3)
	DET	4: group name input, group image, group image add/change button, submit button	
EQ	FTR	2: group, user	FP = Low(3)

	DET	6: group name, group image, group members, group invite link, members balance, user image	
ILF	RET	2: group, user	FP = Low(7)
	DET	8: group_id, group name, user_id, user name, user balance, group_image, userimage, group_invite_link	

### افزودن خرج جديد

EI	FTR	3: group, expense, user	FP = High(6)
	DET	8: expense name input, expense price input, payer info radio button, shared members checkbox, datetime input, decription input, receipt image file input, submit button	
ILF	RET	3: group, expense, user	FP = Low(7)
	DET	7: group_id, user_id, balance, expense_id, expense_price, expense_receipt_image, expense_name, expense_desc	

### ويرايش خرج

EI	FTR	3: group, expense, user	FP = High(6)
	DET	8: expense name input, expense price input, payer info radio button, shared members checkbox, datetime input, decription input, receipt image file input, submit changes button	
EQ	FTR	3: group, expense, user	FP = Average(4)
	DET	7: expense name input, expense price input, payer info radio button, shared members checkbox, datetime input, decription input, receipt image file input	
ILF	RET	3: group, expense, user	FP = Low(7)
	DET	7: group_id, user_id, balance, expense_id, expense_price,	

		expense_receipt_image, expense_name, expense_desc	
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## پرداخت بدهی

EO	FTR	1: group, user	FP = Low(4)
	DET	4: group name, group image, balance, pay button	
ILF	RET	1: group	FP = Low(7)
	DET	4: group_id, group_name, group_image, group_members	
EIF	RET	1: group	FP = Low(5)
	DET	5: payment_api, payment_amount	

## نیازمندی‌های غیر عملکردی

راهنما:

- 0 Not present, or no influence
- 1 Incidental influence
- 2 Moderate influence
- 3 Average influence
- 4 Significant influence
- 5 Strong influence throughout

GENERAL SYSTEM CHARACTERISTIC	SCORE
DATA COMMUNICATIONS	3
DISTRIBUTED DATA PROCESSING	0
PERFORMANCE	2
HEAVILY USED CONFIGURATION	0
TRANSACTION RATE	4
ON-LINE DATA ENTRY	3
END-USER EFFICIENCY	1

ON-LINE UPDATE	5
COMPLEX PROCESSING	1
REUSABILITY	3
INSTALLATION EASE	2
OPERATIONAL EASE	0
MULTIPLE SITES	0
FACILITATE CHANGE	1
SUM	25

$$VAF = 0.65 + [(\sum_{i=1}^{14} Ci)/100] = 0.65 + 25/100 = 0.65 + 0.25 = 0.90$$

محاسبه‌ی FP

$$FP = UAF * VAF$$

### Unadjusted Function Point:

Type of Component	Complexity of Components			
	Low	Average	High	Total
External Inputs	3 x 3 = 9	x 4 =	2 x 6 = 12	21
External Outputs	2 x 4 = 8	x 5 =	x 7 =	8
External Inquiries	1 x 3 = 3	1 x 4 = 4	x 6 =	7
Internal Logical Files	6 x 7 = 42	x 10 =	x 15 =	42
External Interface Files	1 x 5 = 5	x 7 =	x 10 =	5
Total Number of Unadjusted Function Points				83

$$FP = UAF * VAF = 83 * 0.90 = 74.7$$

:Cocoma

در جدول QSM از ردیف avg زبان javascript(node.js) استفاده شده.

$$\text{SLOC} = \text{FP} * 47 = 74.7 * 47 = 3510.9 = 3.5 \text{ KLOC}$$

در روش cocomo با توجه به مشخصات پروژه از مدل ارگانیك استفاده شده.

$$E = \text{effort} = a_b (\text{KLOC})^{b_b} = 2.4 * (3.5)^{1.05} = 8.942 \text{ PersonMonth}$$

$$D = \text{Deployment time} = c_b (E)^{d_b} = 2.5 * (8.942)^{0.38} = 5.747 \text{ Month}$$

$$SS = \text{staff size} = E/D \text{ persons} = 8.942/5.747 = 1.5$$

$$P = \text{productivity} = \text{KLOC}/E = 3.5/8.942 = 0.391$$