iPad Restaurant Application
Lab 3: Cost Estimation

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Cost Estimation

Albrecht Function Points Estimation:

1. LIF: the menu application needs to be able to store the current menu and offers provided by the vendor…. *Medium* complexity - 10 FP
2. EIF: in case the vendor is part of a chain, the menu and coupon offerings may have to be translated from a central database at headquarters…. *High* complexity - 10 FP
3. EI: the application needs to be able to calculate customers totals depending on the input of the order…. *Low* complexity - 3 FP
4. EO: customers may want to query the totals of their existing orders which requires extracting details from internal files…. *Medium* complexity - 5 FP
5. EQ: employees will want to see customer orders to confirm they are fulfilling orders correctly…. *Low* complexity - 3 FP

Total Function Points: 31 FP

Basic Cocomo

We estimate that the project to be a *"semi-detached"* project because the application has to be modular enough to fit the requirements of different customers. Furthermore, besides one team member, most of the members do not have past experience creating a similar project.

A = 3.0
B = 1.12
Estimated KLOC = 3000

$E_i = 3.0(3)^{1.12}$
$E_i = 10.27$
Therefore, the estimated effort for this project is 10.27 person-months.

Intermediate Cocomo

Semi-detached Project:

Cost Driver Categories	**Rate**	**Cost Driver**	**Total**
Product Attributes			
Required software reliability	2	1.15	2.3

Size of application database	1	0.94	0.94
Complexity of the product	2	1.00	2
Hardware Attributes			
Runtime performance	2	1.00	2
Memory constraints	1	1.00	1
Volatility of the virtual machine environment	1	0.87	0.87
Required turnabout time	3	1.15	3.45
Personnel Attributes			
Analyst capability	1	1.19	1.19
Applications experience	1	1.0	1
Software engineer capability	2	1.17	2.34
Virtual machine experience	1	0.90	0.90
Programming language experience	3	1.14	3.42
Project Attributes			
Application of software engineering methods	1	1.10	1.10
Use of software tools	2	1.00	2
Requires development schedule	2	1.08	2.16
Total EAF			26.67

$E = (3.0(3)^{1.12})26.67$

E = 273.85 person months

Activity Diagram

Our team believes the following activities are required for the completion of this project.

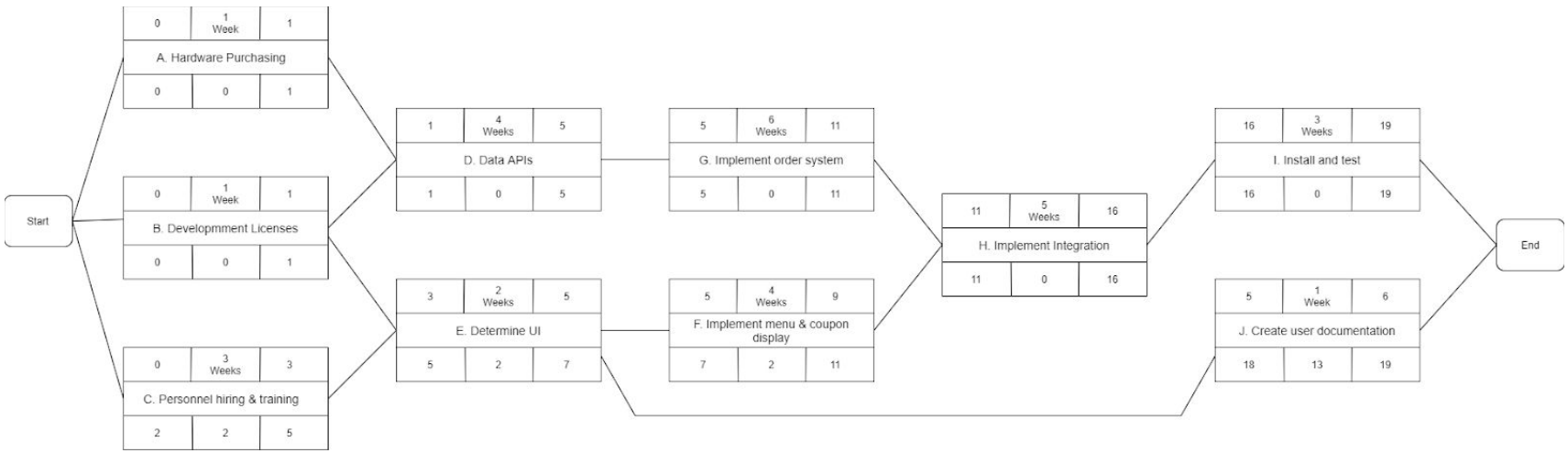
- A. Hardware purchasing: need Macs and iPads for development and testing.
- B. Development licenses: purchase apple developer licenses.
- C. Personnel hiring & training: hire and train development team.
- D. Data APIs: create the APIs to menu and offer data from central database.
- E. Determine UI: determine a base UI for the application.
- F. Implement menu & coupons display: create the UI for displaying the menu and coupons.
- G. Implement order system: create the UI and logic for customer orders.
- H. Implement integration: implement integration between new app and existing ordering system.
- I. Install and test: install the system and conduct acceptance testing.
- J. Create user documentation: create user help documentation.

The activity diagram is attached at the end of the document.

Risk Analysis

- Unqualified workers for the tasks required for development.
    - WIth the use of a strong recruiter and project lead, we can look at people for their strengths and create a team that fits our needs for this project.
- On deployment, and during normal use, if the systems go down, or the app for the iPads does not work.
    - Have paper menus as backup in case .
- Deadline not reached due to unforeseen circumstances. (Not Including unproductive work).
    - Paper menus as backup to keep the restaurant running.
- Worker sickness/injury/leave for any reason
    - Have backup workers who keep track of the project so that they can more easily be caught up if they are required to work due to a lost team member.
- Possible requirements change
    - This seems unlikely due to the requirements but with an agile process of development we will be able to adapt to any changes.
- Sluggish and unproductive work from employees.
    - Specific recruitment and strict job requirements to ensure deadline is met and quality is sufficient.
- Integration of kitchen and dining room tools
    - Test in house the workings between the two products, to ensure cohesion and that everything is working as intended before deadline.

- Lack of leadership or overall design of the project.
    - Strong leader as well as very detailed requirements initially to ensure the workers know where they are, and the goal that is to be reached. Also, meetings with the clients to ensure requirements are being understood and implemented as desired.
- Going over budget before completing the product
    - Strict budgeting and cost estimation done beforehand to ensure that workers know the limits that can be spent and hours worked.
- Project estimation is not accurate or makes sense.
    - Strict time estimation and effort estimation to be done during planning phases to ensure streamlined development phase.


Start
0
1 Week
1
A. Hardware Purchasing
0
0
1
0
1 Week
1
B. Developmment Licenses
0
0
1
0
3 Weeks
3
C. Personnel hiring & training
2
2
5
1
4 Weeks
5
D. Data APIs
1
0
5
3
2 Weeks
5
E. Determine UI
5
2
7
5
6 Weeks
11
G. Implement order system
5
0
11
5
4 Weeks
9
F. Implement menu & coupon display
7
2
11
11
5 Weeks
16
H. Implement Integration
11
0
16
16
3 Weeks
19
I. Install and test
16
0
19
5
1 Week
6
J. Create user documentation
18
13
19
End