Software Project Management – Fall 2016

Mid-term Exam

Date: 26th October 2016

Time allowed: 2 hours

Total marks: 50

Answer the following questions. Give details according to the marks and time given.

Q1. Define Scope Creep, Hope Creep, Effort Creep and Feature Creep.
4 marks

Scope creep means any change in the project that was not in the original plan.

Hope creep is the result of a project team member's getting behind schedule but reporting that he or she is on schedule and hoping to get back on schedule at the next report date.

Effort creep is the result of the team member's working but not making progress proportionate to the work expended. Every one of us has worked on a project that always seems to be 95% complete no matter how much effort is expended to complete it. Each week the status report records progress, but the amount of work remaining doesn't seem to decrease proportionately.

Feature creep is closely related to scope creep. Feature creep results when the team members arbitrarily adds features and functions to the deliverable that they think the customer would want to have. Problem is that the customer didn't specify the feature, probably for good reason.

Q2. List down the direct costs that a business can have.
3 marks

- Development Costs
- Setup Costs
- Operational Costs

Q3. From the given data calculate the payback period, net profit, ROI and NPV using 10% discount rate. Remember to show your working:
6 marks

Year	Cash flow
0	-250,000
1	50,000
2	50,000
3	50,000

4	100,000
5	150,000

Table 3.3 Table of NPV discount factors

	Discount rate (%)					
Year	*5*	*6*	*8*	*10*	*12*	*15*
1	0.9524	0.9434	0.9259	0.9091	0.8929	0.8696
2	0.9070	0.8900	0.8573	0.8264	0.7972	0.7561
3	0.8638	0.8396	0.7938	0.7513	0.7118	0.6575
4	0.8227	0.7921	0.7350	0.6830	0.6355	0.5718
5	0.7835	0.7473	0.6806	0.6209	0.5674	0.4972
6	0.7462	0.7050	0.6302	0.5645	0.5066	0.4323
7	0.7107	0.6651	0.5835	0.5132	0.4523	0.3759
8	0.6768	0.6274	0.5403	0.4665	0.4039	0.3269
9	0.6446	0.5919	0.5002	0.4241	0.3606	0.2843
10	0.6139	0.5584	0.4632	0.3855	0.3220	0.2472
15	0.4810	0.4173	0.3152	0.2394	0.1827	0.1229
20	0.3769	0.3118	0.2145	0.1486	0.1037	0.0611
25	0.2953	0.2330	0.1460	0.0923	0.0588	0.0304

Payback = 4 years

Net profit = 150,000

ROI = Average annual profit/Total investment * 100 = (150000/5)/250,000*100 = 12%

NPV = ∑ Present Value = ∑ (value in year t * $(1/(1+r)^t)$)

Present values:

-250000

45,455

41,320

37,565

68,300

93,135

NPV = 35,775

Q4. Draw the Step-wise project planning approach. 10 marks

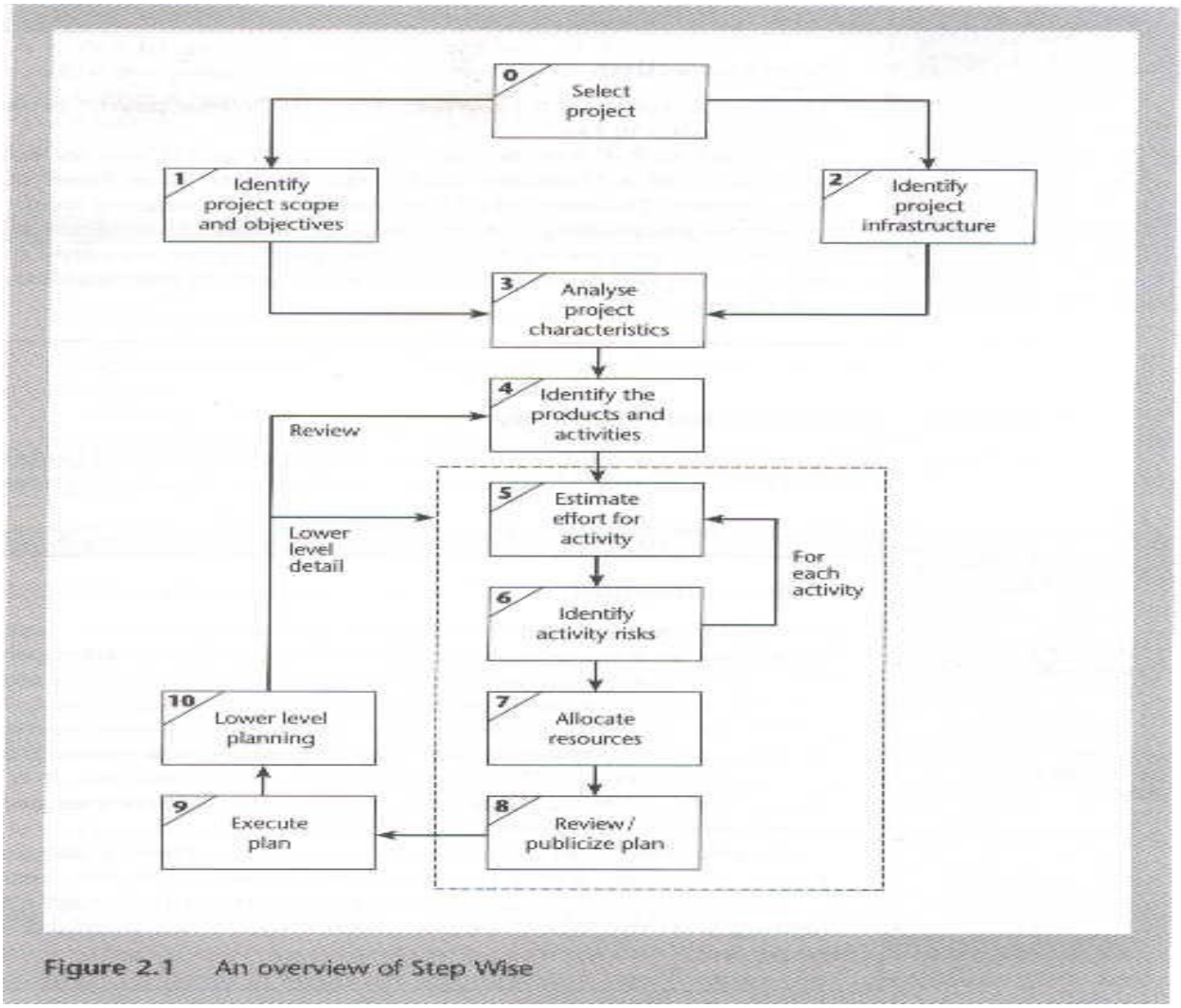

Figure 2.1 An overview of Step Wise

Q5. When should the waterfall model be preferred over other approaches and why? 2 marks

When the requirements are clear and predecessors of the system exist.

Q6. What are the two types of prototyping? When should each of them be used? 4 marks

Throwaway – when quick feedback is required

Evolutionary – to provide functionality to the user

Q7. Draw the Atern (DSDM) process model. Describe it in 4-6 lines.
6 marks

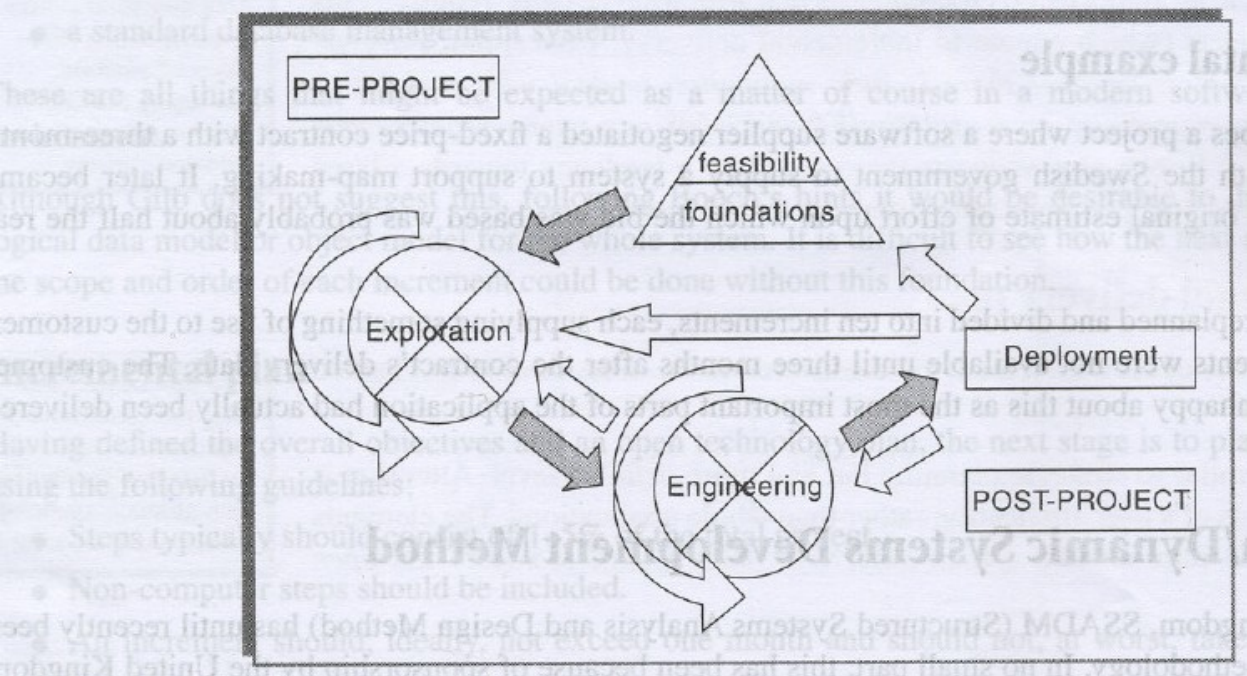

FIGURE 4.5 Atern process model

Q8. a) Below is a data flow model for a function within the *SafeHome* software. Calculate the unadjusted Albrecht Function Points for the given user interaction function, assuming that all components are of low complexity.
11 marks

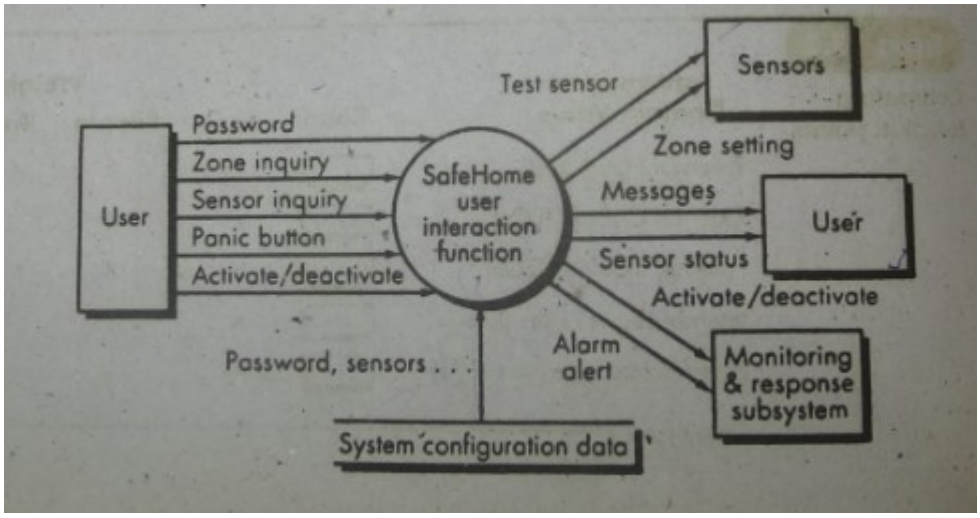

Table 5.2 Albrecht complexity multipliers

	Multiplier		
External user type	*Low*	*Average*	*High*
External input type	3	4	6
External output type	4	5	7
Logical internal file type	7	10	15
External interface file type	5	7	10
External inquiry type	3	4	6

External inputs: 3

External outputs: 2

Logical internal file: 1

External interface file: 4

External inquiry: 2

Total FPs: (3*3) + (2*4) + (1*7) + (4*5) + (2*3) = 50 FPs

Q8. b) Using these function points and Capers Jones rules of thumb, calculate the **calendar months** required to complete the development of this function.
2 marks

$50^{0.4}$ = 4.78 ~= 5 months

Q9. A project was initially planned to be completed in 24 months and its effort was estimated to be 1000pm. Due to competition, the management decided to finish the project earlier within 18 months. What is the new effort required for the project in pm (person-months), according to Putnam's research.
2 marks

$pm_{new} = pm_{org} \times (td_{org}/td_{new})^4$

where pm_{new} is the new effort, pm_{org} is the original effort, td_{new} is the new schedule and td_{org} is the original time estimate

$pm_{new} = 1000 * (24/18)^4$