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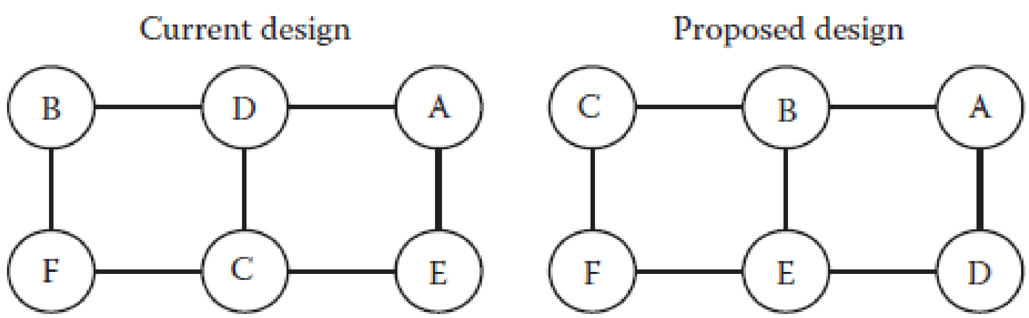
SUBJECT NAME: BUSINESS PROCESS ENGINEERING

QUESTION#1:

a) Define General Process Chart and how it characterizes the process?

b) List disadvantages of Process Activity Chart.

c) Compute Load Distance (LD) scores for the below given current and proposed designs and identify which design is the better one;



	A	B	C	D	E	F
A		20		20		80
B			10		75	
C				15		90
D					70	

ANSWER a:

Process Charts are one of the simpler forms of workflow charting and are still in regular usage but are less common than they once were. This is unfortunate since it was the ubiquitous nature of the process chart that made it a common "language" between different groups of people and across different industries. The characteristics of process are

- Increase understanding of a process
- Analyze how a process could be improved
- Show others how a process is done
- Improve communication between individuals engaged in the same process
- Provide process documentation
- Plan projects

ANSWER b:

UML modeling language include that these diagrams have the prospective to turn into extremely complicated for the reason that their person-friendly mother nature may well lend by itself to an all-inclusive description. In other text, since it is so simple to exhibit the data linked to the venture, why not consist of all of it? When an analyst has a massive job, generating a one, overly advanced diagram can be a temptation.

Nonetheless, as one particular writer notes, “if you are using action diagrams to define the structure of a work circulation, you really should not attempt to examine many amounts of exercise graphs down to their most ‘atomic’ amount”. In its place, an analyst needs to try out to current a new diagram for every single function move, or if far more applicable, to use swim lanes to existing distinct actors within just the identical get the job done flow.

A further aspect of these diagrams is that they may perhaps not be utilized in lieu of a state diagram or sequence diagram simply because “exercise diagrams do not give element about how objects behave or how objects collaborate.” This is not a downside for each se, but it is important for an analyst to maintain in intellect when applying diagrams to their get the job done.

In summary, action diagrams are fairly effortless to get the cling of and will be useful for most tasks because they plainly and moderately clearly display how matters work.” As opposed to numerous diagramming methods, these diagrams also permit the depiction of multiple decisions and actors inside of a do the job move, and they are straightforward for even non-complex users.

ANSWER c:

Centers	Load	Distance	LD Scores	Distance	LD Scores
(A,B)	20	2	40	1	20
(A,D)	20	1	20	1	20
(A,F)	80	3	240	3	240

(B,C)	10	2	20	1	10
(B,E)	75	3	225	1	75
(C,D)	15	1	15	3	45
(C,F)	90	1	90	1	90
(D,E)	70	2	140	1	70
TOTAL			**790**		**570**

QUESTION#2:

a. The observation periods for 3, 6, 5, and 2 jobs are 10, 20, 20, and 10 min, respectively. In other words, the WIP was 3 jobs for 10 min, 6 jobs for 20 min, 5 jobs for 20 min, and 2 jobs for 10 min. Then, calculate the average WIP?

ANSWER:

When the observation periods are irregular (i-e they are not all of the same length) then the average WIP calculations must account not only for numbers of jobs in each period but also for the length of the period. Suppose that the observation periods were 10,20,20,and 10mins, respectively. In other words WIP was 3 jobs for 10 min, 6 jobs for 20 min, 5 jobs for 20 min, 2 jobs for 10 min. then the average WIP is calculated as follows

Avg= 3*10+6*20+5*20+2*10/10+20+20+10

= 4.5 jobs answer

b. A process management team has studied a process and has developed the flowchart in Figure 3. The team also has determined that the expected waiting and processing times (in minutes) corresponding to each activity in the process are as shown in Table 1.

  i. Calculate the average CT for this process.
  ii. Calculate the CT efficiency.

Activity	Waiting Time (Min)	Processing Time (Min)
A	20	12
B	15	18
C	5	30
D	12	17
E	3	12
F	5	25
G	8	7
H	5	10
I	15	25
J	5	20
K	4	10

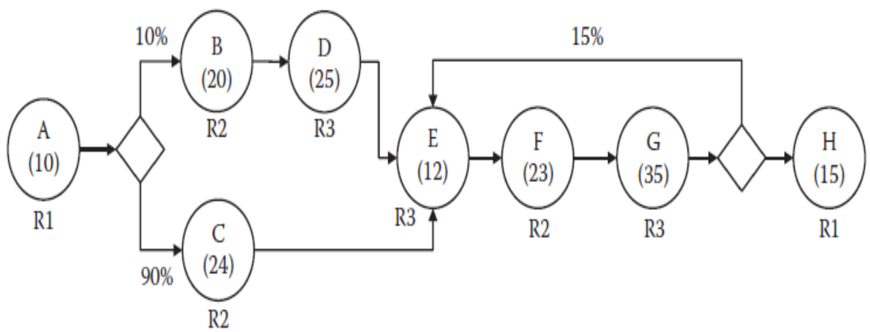


Figure 1 Process Flow Chart

ANSWER i:

$$CT = T_A+(1+0.2)(T_B+T_C)+T_D+\max\{T_E, T_F, T_G\}+0.9(T_H)+T_{I+TJ+TK}$$

The activity time = Processing time + Waiting time

$\Rightarrow$ CT = 10+0.1*20+25+1.15 (12+23+35) +15

$\Rightarrow$ CT=10+2+25+1.15(70) +15

$\Rightarrow$ CT= 52+80.5

$\Rightarrow$ CT=132.5

ANSWER ii:

The theoretical cycle time (CT*)is obtained by using the processing times instead of the activity times (i.e., by disregarding the waiting time)

⇒ PROCESSTIME=12+0.1*18+30+1.15(17+12+25)+7+10

⇒ =25+20+10+12+1.8+30+62+1+7+10+25+20+10

⇒ =177.9

⇒ The Cycle Time Efficiency =177.9/132.5

⇒ =1.34

QUESTION#3:

Analyze capacity needs and utilization with the help of below given data and fill the given table using respective formulas;

Activity	Processing Time (Min)	Resource Requirements	Number of Jobs
A	2	R1	1
B	5	R1	0.3
C	8	R2	1
D	3	R2	1.1
E	4	R2	1.1
Inspection	4	—	1.1
F	2	R1	1
G	4	R3	1
H	2	R3	1

Resource	Unit Load (Min)	Unit Capacity Jobs/min	Available Resources	Pool Capacity Jobs/min
R1			2	
R2			2	

R3			1	

ANSWER:

Activity	Processing Time (Min)	Resource Requirements	Number of Jobs
A	2	R1	1
B	5	R1	0.3
C	8	R2	1
D	3	R2	1.1
E	4	R2	1.1
Inspection	4	—	1.1
F	2	R1	1
G	4	R3	1
H	2	R3	1

Resource	Unit Load (Min)	Unit Capacity Jobs/min	Available Resources	Pool Capacity Jobs/min
R1	2+5*0.3+2=5.5	1/5.5	2	2/5.5=0.36
R2	8+1.1*(3+4)=15.7	1/15.7	2	2/15.7=0.13
R3	4+2=6	1/6	1	1/6=0.17

QUESTION#4:

List the steps for TOC Methodology.

ANSWER:

Step 1: Identify the constraint

This tells us where to focus our improvement efforts, since we know that only an improvement at the constraint makes a difference.

Step 2: Optimize the constraint

Before adding capacity, we need to use the capacity we already have. “Optimize” in this sense means “doing everything possible to use the constraint to its fullest capacity.”

Step 3: Subordinate the non-constraints

The job of all non-constraints is to subordinate their decisions to the constraint’s needs. They should optimize for constraint (and thus system) performance, not their own individual performance.

Step 4: Elevate the constraint

Only once we’ve completed the previous steps does it make sense to add more constraint capacity, and thereby increase system performance. Because adding capacity is tremendously expensive in terms of time and money, we do it as a last resort, not a first resort.

Step 5: Return to step 1

The inevitable result of the first four steps, and the reason this is a “continuous” improvement method, is that the constraint moves somewhere else. This step insists that you start back at the beginning, and don’t let inertia become the constraint.