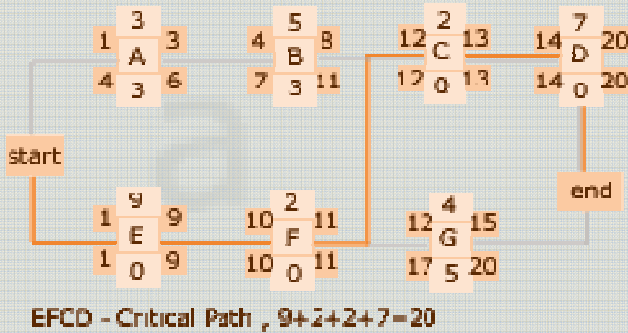
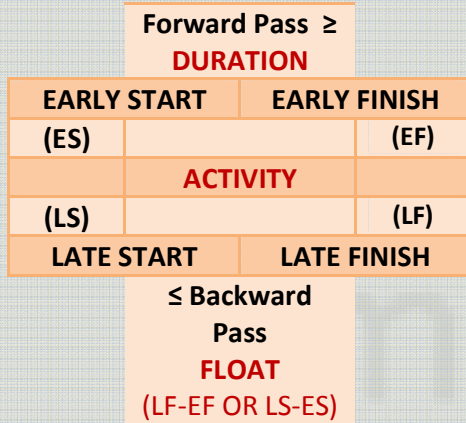


A schedule network diagram that use Critical path method is depicted in the figure. It is common, to calculate in the following order

CRITICAL PATH METHOD



Forward Pass

$$EF_{(n+1)} = ES_{(n)} + \text{Duration} - 1$$

$$EF\{A,B,C,D,E,F,G\} = \{ 1+3-1=3, 4+5-1=8, 12+2-1=13, 14+7-1=20, 1+9-1=9, 10+2-1=11, 12+4-1=15 \}$$

where $ES_{(n)} = EF_{(n-1)} + 1$

$$ES_A = 0+1=1, ES_B = 3+1=4$$

$ES_C = \text{MAX}(ES_E, ES_F) + 1$ since C on forward pass is dependent on B-to-A, and F-to-E = $\text{max}(11,8)+1=12$ where

$$ES_E = 0+1=1, ES_F = 9+1=10 \text{ and}$$

$$ES_G = 11+1=12, ES_D = 13+1=14$$

Similarly Backward Pass

$$LF_{(n-1)} = LS_{(n)} - 1 \text{ where}$$

$$LS = LF - \text{Duration} + 1$$

For LF on last node, find the maximum length (Tips: Critical path)

$$ABCD = 3+5+2+7=17, EFG = 9+2+4=15, EFCD = 9+2+2+7=20 \text{ (Maximum)}. \text{ So last}$$

nodes $LF_D = EF_D = 20$ and $LS_D = ES_D = 14$ and $LF_G = \text{Max}(EF_D, EF_G) = 20$, $LS_D = 20-7+1=14$, $LF_C = LF_D - 1 = 14-1=13$, $LS_C = 13-2+1=12$, $LS_G = 20-4+1=17$, $LF_F = \text{Min}(LS_C, LS_G)$ since F on backward pass is dependent on C=12-1=11, $LF_B = 12-1=11$, $LS_B = 11-5+1=7$, $LF_A = LS_B - 1 = 7-1=6$, $LS_A = 6-3+1=4$, $LF_E = LS_F - 1 = 10-1=9$, $LS_E = 9-9+1=0$ and finally,

FLOAT (LS -ES) are { A=4-1=3, B=7-4=3, C=12-12=0, D=14-14=0, E =1-1=0, F=10-10=0, G=17-12=5} and so EFCD is critical path that contains zero float and longest path.

