

## الفصل الثالث

تحديد المدة الزمنية للنشاط وإجراءات حسابات

المسار الحرج باستخدام شبكة الأعمال

(Determining Activity Duration and Critical Path Calculations using Precedence Diagram)

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<b>.(Estimating Durations)</b>		-
	.	-
<b>(Weather and the Schedule )</b>		-
	.	-
<b>.(Scheduling Issues)</b>		-
	.	-
<b>.(Calculations on a Precedence Network)</b>		-
" - "		- -
<b>(Early Start [ES] and Early Finish[EF]).</b>		- -
( - )		- -
<b>(Late Start [LS] and Late Finish [LF]).</b>		- -
<b>.( Total Float (TF))</b>		- -
<b>.(Free Float (FF))</b>		- -
	.	-
	.	-
<b>.(Summary)</b>		-

: -

(Time Scheduling)

(Activity Duration)

(Critical Path Calculation)

.(Project Duration)

( )

.(Early Start) (ES)

( )

.(Late Finish) (LF) ( )

( )

Early Finish (EF)

.Late Start (LS)

:(Estimating Durations)

(Normal Level of Resource)

(Jack Hammer)

$$\frac{3000}{1*100} = 30 \text{ days}$$

$$\frac{3000}{2*100} = 15 \text{ days}$$

$$\frac{3000}{3*100} = 10 \text{ days}$$

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: -  
**( The Weather and the Schedule )**

%

( ) %

(Contingency Duration)

**:(Scheduling Issues)**

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**:البداية المبكرة (ES) (Early Start)**

**:النهاية المبكرة (EF) (Early Finish)**

$$(\text{Duration} + \text{E.S} = \text{E.F})$$

$$(\quad + \quad = \quad)$$

**البداية المتأخرة (Ls) Late Start:**

**النهاية المتأخرة (LF) (Late Finish):**

$$(\text{Duration} + \text{L.S} = \text{L.F})$$

$$(\quad + \quad = \quad)$$

$$(\quad - (\quad) = \quad)$$

**مدة المشروع (Project Duration):**

**السماح الكلي (TF) (Total Float):**

$$- = - = (\quad)$$

**السماح الحر (FF) (Free Float):**

**السماح المستقل (IF) (Independent Float):**

**النشاط الحرج (CA) (Critical Activity):**

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.(

**المسار الحرج (CP) (Critical Path):**

" "

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**(Calculations on a Precedence Network)**

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**الخانات:**

(Activity Links)

**الخطوط:**

.(Lag Time)

( - )

( - )

.CPM

:( - ) - -

**(Early Start [ES] and Early Finish[EF])**

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**(Late Start [LS] and Late Finish [LF])**

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**:(Total Float) (TF)**

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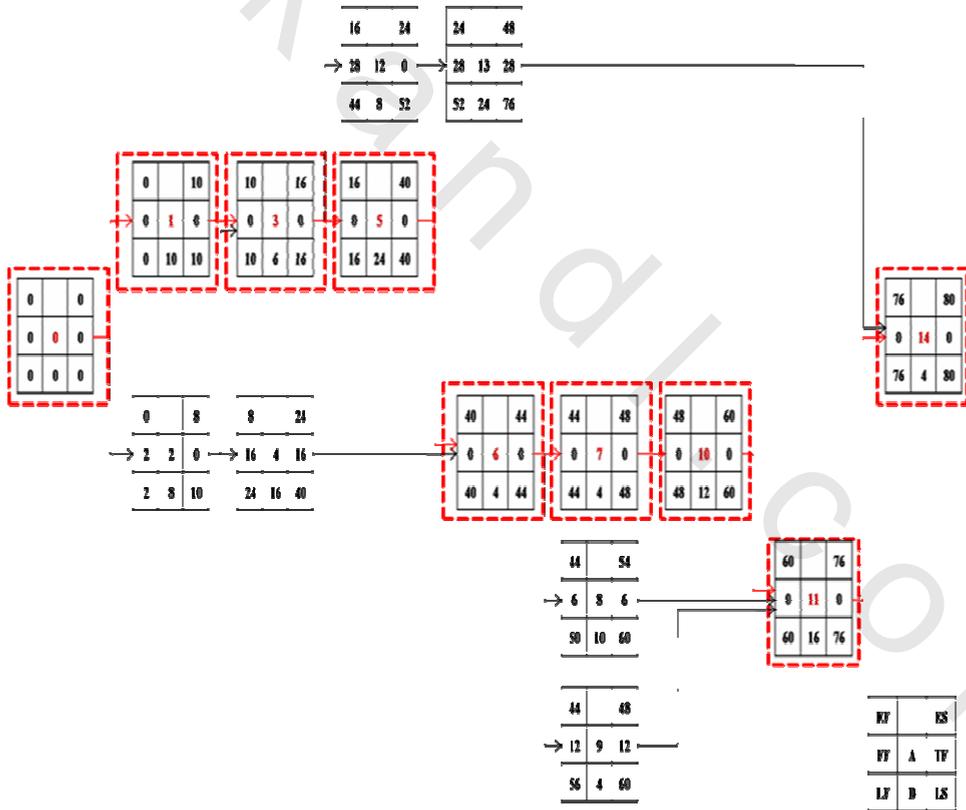
**:(Free Float) (FF)**

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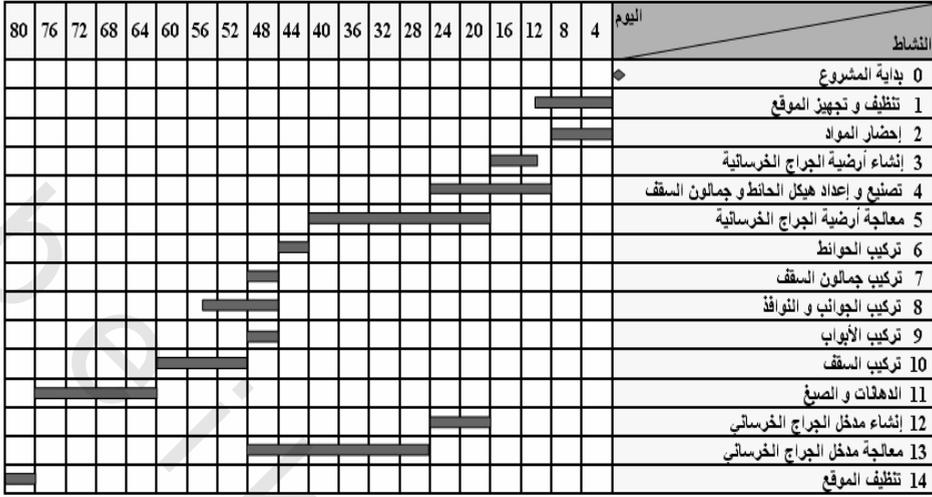
(Critical Activity)  
 .(Critical Path)  
 ( - )

( - ) ( - )



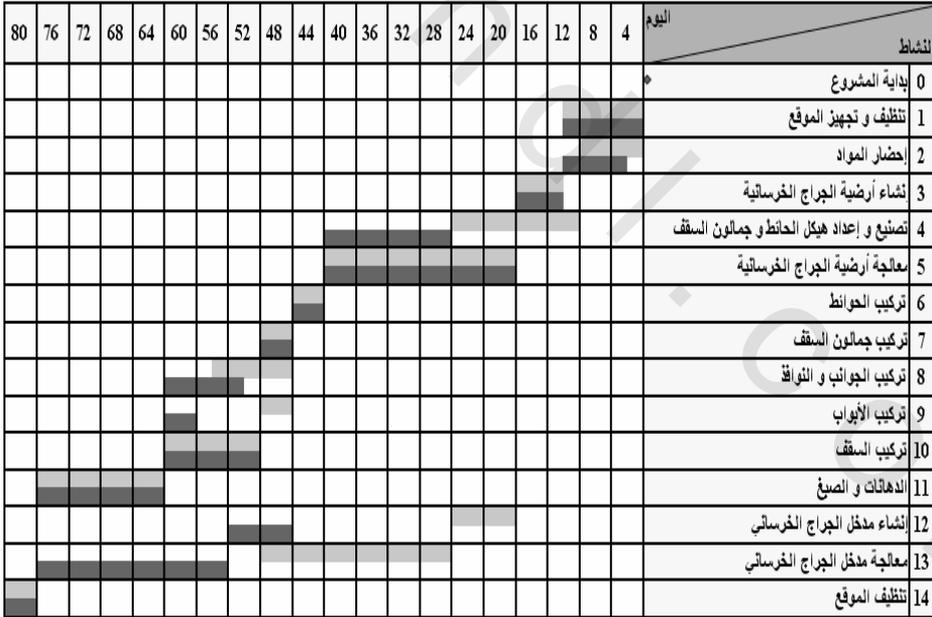
شکل (۳-۳)

## حساب الأزمنة المختلفة لمشروع الجراج



شكل (٣-٤)

## البرنامج الزمني بطريقة الخطوط الشريطية لمشروع الجراج على أساس البداية المبكرة



شكل (٣-٥)

**البرنامج الزمني بطريقة الخطوط الشريطية لمشروع الجراج على أساس البداية  
المبكرة (الأعلى) والبداية المتأخرة (الأسفل)**

- :

(T.F)

- :

(Working Days)

(Calendar Days)

- :

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