

1 Use of Conditional Statements

1.1 Overview

Conditional statements help you perform actions based on specific criteria.

For example: Consider a situation where a set of instructions needs to be performed if a condition is true. In case the condition is false, a different set of instructions needs to be performed. You can use conditional statements in such a scenario to perform one set of actions if the condition is true and another set of actions if the condition is false.

If-Then Statement



The **If-Then** statement is used when you need to perform an action or a set of actions only when certain criteria or conditions are met. In case the condition is not met, no action is to be performed.

In an **If-Then** statement, you can limit an action, or a set of actions to be performed, only if a condition is true, and no action is performed if the condition is false.

Example with syntax:

```
If Length = "long" Then
    Boxsize = 10.0
End If
```

The working of an if-then conditional statement



If-Then-Else Statement



The **If-Then-Else** statement is used when you need to perform an action or a set of actions when a certain criteria or conditions are met and another set of actions in case that particular criteria/conditions are not met.

Example with syntax:

```
If Length = "long" Then
   Boxsize = 10.0
Else
   Boxsize = 6.0
End If
```

The **End If** statement closes the **If** loop and the program resumes.

The working of an if-then-else conditional statement

Single line If statement

The general form of using an **If** statement is in its block form along with an **End If**. However, you can also use the **If** statement in one single line. The **End If** statement is not used while using the single line **If** statement.

Example with syntax:

```
If Width < 100 Then MessageBox.Show("Width value entered is very small", "Low Value Warning")
If Density < 1000 Then volume = 60 Else volume = 30</pre>
```

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If-Then-Elself statement

The **If-Then-Elself** or the extended block **If** statement allows you to insert an additional condition between the 'If' and the 'Else' parts of the code. The keyword to be used is 'Elself'.



The working of an If-Then-Elself conditional statement

Boolean Variables in conditional statements

A Boolean variable has either a 'true' or a 'false' value associated with it. These are used in relational expressions to check for a specific characteristic and perform an action.

```
If Feature.IsActive("Inch Thread") Then
    Feature.ThreadDesignation("Inch Thread") = "7/16-14 UNC"
End If
If Feature.IsActive("Metric Thread") Then
    Feature.ThreadDesignation("Metric Thread") = "M10x1.5"
End If
```

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Select Case statement

A **Select Case** statement provides the user with a variety of options by specifying an expression to be tested.

The **Case** statements that follow in the code compare other expressions to the test expression. The comparison of other expressions is based on its sequence in the program. The first expression that fulfills the test condition (as per the sequence), has its action executed. Once an action is executed, the program moves to the **End Select** statement. It is good practice in a **Select Case** statement to use a final **Case Else** to handle faulty user input.





Example with syntax:

```
Select Case Liquid
Case "Water"
Density = 1000
Case "Turpentine"
Density = 868.20
Case "Kerosene"
Density = 817.15
Case Else
Density = 0
MessageBox.Show("Not a valid material", "Warning")
```

End Select

The **Select Case** statement can also be used without an association with specific variables. It can be used to work with other conditions (such as Boolean conditions) as shown below:

Example with syntax:

```
Select Case True
Case Viscosity >= 5
Density = Viscosity + 10
Volume = 100/Density
Case Viscosity < 5
Density = Viscosity + 5
Volume = 50/Density
End Select</pre>
```

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1.2 Project: Use Conditional Statements

- 1. Using the *iLogic Projects.ipj*
- 2. Open the Assignment1_without_rule.ipt file.



- 3. In the Manage tab, from the iLogic tab, click the Rule Browser.
 - The iLogic Browser appears.



4. Dock the Rule Browser below the Model Browser.





5. In the Manage ribbon, from the iLogic tab, click Add Rule

- The Rule Name dialog appears.
- Enter Pattern_Selection.

Rul	le Name	×
	Name:	
	Pattern_Selection	
	OK Cancel]

6. The Edit Rule dialog appears.

Edit Rule: Pattern_Selection		? <mark>- ×</mark>
Snippets	厚	Model Options Search and Replace Wizards
System Custom		Assignment1_without_rule Parameters Names
存故		J _X Model Parameters → T _x View: Master Equation
+- Parameters	~	Hate
Features Features		Hole1
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+- iParts		
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⊕ BOM		
		- - -
H- Material Properties		< >
+ Sheet Metal		Ln 1 Col 1
Drawing Advanced Drawing API	-	OK Cancel



- 7. In the Edit Rule dialog, from the Model tab, right-click on Rectangular Pattern1.
 - The Capture Current State option appears.
 - The Model and User parameters and features appear in the program space.
 - Click **Ok** to save and exit the rule.

Model Options Search and Replace Wizards		
Assignment 1_without_rule	Parameters Nam	ies
→ J _X Model Parameters	Parameter	Equation
🗄 🗍 Plate	d10	60 mm
Hole 1	d8	60 mm
Rectangular Pattern 1	d9	9 ul
	d7	9 ul
🛃 🗋 👗 🛍 🛍 🖉 🔍 🧱 🧱	🚊 IfThenEr	nd If 🔻 Keywords 👻 🐃
' ***Rectangular Pattern1***		*
Feature.IsActive("Rectangular	Pattern1") =	True
d10 = 60 mm		E
d8 = 60 mm		
d9 = 9 ul		-
d7 = 9 ul		ź

8. Add Text parameter named Hole_density. The parameter is displayed. In the Manage tab, click Parameters. The Parameters dialog box appears.

1 In the **Parameters** dialog, select **Add Text**. A new user parameter slot is created.

Place the cursor in the Parameter Name section and name it as Hole_density

³ Note that **Pattern_selection** shows up in the **Driving Rule** column for all the parameters due to the **Capture Current State** performed in a previous step.

Place a check mark in the Key column in the Hole_density row

aramete	ers								×
Param	ieter Name	Unit/T	Equation	Nominal	Driving Rule	То	Model Vi	Ke	Comment
- Mo	odel Parameters								
1000	- d2	mm	60 mm	60.000		0	60.000		
	- d3	deg	0.0 deg	0.0000			0.000000		
	d5	mm	(d1 - (d8 * (d7 - 1 ul)))/ 2 ul	110.00		0	110.00		
	d6	mm	(d0-(d10*(d9-1 ul)))/2ul	110.00		0	110.00		
BDum	d4	mm	50 mm	50.000	3	0	50.000		
	- d7	ul	9 ul	9.0000	Pattern_Selection	0	9.000000		
	- d8	mm	60 mm	60.000	Pattern_Selection	0	60.000		
	- d9	ul	9 ul	9.0000	Pattern_Selection	0	9.000000		
BE:	d 10	mm	60 mm	60.000	Pattern_Selection	0	60.000		
122	- d0	mm	700 mm	700.00			700.00		
	- d1	mm	700 mm	700.00			700.00		
Us - Us	ser Parameters								
2	Hole_density	Text					(4)→		
Service of	es constanta	组织的	2. C. S.					0.655	AD
7	Add Text	-	Update		Reset T	olera	ince		<< Less
2	Add Nu	meric	e Update		+		<u> </u>		Done
	Add Tex	t				_			 4
	Add Tru	e/False							

9. Right click Hole_density and select Make Multi-Value and add the value items Low, Medium and High

1 Right-click the **Equation** section and select **Make Multi-Value**. The **Value List Editor** dialog appears.

²In the **Add New Items** group, enter 'Low', 'Medium' and 'High' and click **Add**. The values are displayed in the **Value** group box.

Para	meters			Value List Editor	
P	arameter Name	Unit/T	Equation	Add New Items	2 Add
	Model Paramete	rs			
	- d2	mm	60 mm		Clear
	d3	deg	0.0 deg]	
	d5	mm	(d1-(d8*(d7-1ul))) 2ul	۲ (۲۰۰۲)	
	d6	mm	(d0-(d10*(d9-1 ul)))/2ul	Value	
	d4	mm	50 mm	High	Delete
	- d7	ul	9 ul	Low	
	d8	mm	60 mm	Medium	
	d9	ul	9 ul		
	d 10	mm	60 mm		
	d0	mm	700 mm		
	d1	mm	700 mm	Allow custom values 3 OK	Cancel
	User Parameter	;			
	Hole_density	Text	1 Make Multi-Valu	Je Martin Carlos	ap
8	Add Text	-	Delete Paramete	Reset Tolerance	<< Less
2	Link		Immediate Update		Done

³Click **OK**. You have added a new user parameter



10. Modify the parameter in Sketch1.

- Change **d0** to **Width**
- Change **d1** to **Length**

Image: Solid		Dimension Properties
 B = ☐ Origin C = ☐ Plate C = Sketch1 C = Rectangular Pattern 1 C = Rectangular Pattern 1 C = B = G = G = G = G = G = G = G = G = G	d1 = 700 mm	Settings Name: Length Precision: 0.123 Value: 700.000 mm
		Tolerance Type: Default ▼ Upper: Hole: + 0.000 mm H7 Lower: Shaft: - 10.000 mm h7

11. In the Manage tab, click Parameters. The Parameters dialog box appears.

- Change **d7** to **RowQuantity**
- Change **d8** to **RowSpacing**
- Change d9 to ColumnQuantity
- Change d10 to ColumnSpacing
- Click **Done**
- 12. Right click on Pattern_selection and select Edit Rule.
 - **NOTE:** All changes made to the parameter names in the previous step are reflected in the rules

iLogic					- × ?
Rules	Forms	Global Forr	ms	External Rules	
As	signment	1_without_	rule	:	
	Pattern	_Selei	R	un Rule	
			E	dit Rule 🔶	
			R	egenerate Rule	
			S	uppress Rule	
			D	elete	
		_	-		_



- **13.** Use the If...Then...End If conditional statement from the panel above the program space to insert conditions in the rule.
 - Place an If...Then...End If If statement.
 - Change My_Expression to Hole_density = "Low"
 - Set ColumnSpacing equal to 160 mm
 - Set RowSpacing equal to 160 mm
 - Set ColumnQuantity equal to 4 ul
 - Set RowQuantity equal to 4 ul



14. Add a UpdateAfterChange snippet

- In the Snippets menu, expand the Parameters snippet
- Double click on UpdateAfterChange snippet.
- The **UpdateAfterChange** snippet is displayed in the program space.



- **15.** Use the **Elself...Then** conditional statement from the panel above the program space to insert conditions in the rule.
 - Place an **Elself...Then** statement.
 - Change My_Expression to Hole_density = "Medium"
 - Set ColumnSpacing equal to 120 mm
 - Set RowSpacing equal to 120 mm
 - Set ColumnQuantity equal to 5 ul
 - Set RowQuantity equal to 5 ul
 - Add the UpdateAfterChange snippet





- **16.** Use the **Else** conditional statement from the panel above the program space to insert conditions in the rule.
 - Place an Else statement.
 - Set ColumnSpacing equal to 60 mm
 - Set RowSpacing equal to 60 mm
 - Set ColumnQuantity equal to 9 ul
 - Set RowQuantity equal to 9 ul
 - Add the UpdateAfterChange snippet



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17. Add a Comment at the beginning of the Rule describing what the Rule does. Refer to the image to compare if the rule you created matches.

```
'The execution of this rule enables you to choose between 3 values of
hole density
'- High, Medium, and Low through a list box
If Hole_density = "Low" Then
      ' ***Rectangular Pattern1***
      Feature.IsActive("Rectangular Pattern1") = True
     ColumnSpacing = 160 mm
     RowSpacing = 160 mm
     ColumnQuantity = 4 ul
      RowQuantity = 4 ul
     Parameter.UpdateAfterChange = True
ElseIf Hole_density = "Medium" Then
      ' ***Rectangular Pattern1***
     Feature.IsActive("Rectangular Pattern1") = True
      ColumnSpacing = 120 mm
      RowSpacing = 120 mm
      ColumnQuantity = 5 ul
     RowQuantity = 5 ul
     Parameter.UpdateAfterChange = True
Else
      ' ***Rectangular Pattern1***
      Feature.IsActive("Rectangular Pattern1") = True
      ColumnSpacing = 60 mm
      RowSpacing = 60 mm
      ColumnQuantity = 9 ul
      RowQuantity = 9 ul
      Parameter.UpdateAfterChange = True
End If
```



18. Change the Hole_density parameter in the Parameters dialog Box.

- Select **Medium** from the pull down menu.
- Select Low from the pull down menu.



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1.3 Project: Use iLogic Wizards

19. In the Manage tab, click Parameters. The Parameters dialog box appears.

- Change d2 to Thickness
- Change d4 to HoleDiameter
- Click Done

20. In the Manage ribbon, from the iLogic tab, click Add Rule

- The Rule Name dialog appears.
- Enter Hole_Size.

Rule Name		×
Name:		
Hole_Size]
	ок	Cancel

21. The Edit Rule dialog appears.

Edit Rule: Pattern_Selection		? <mark>×</mark>
Edit Rule: Pattern_Selection Snippets System Custom Parameters Parameters Peatures Properties Prop	平	Model Options Search and Replace Wizards Assignment1_without_rule
iFeatures Constraints ···· Measure ···· ··· Work Features ···· ···· ···· ···· ··· ···· ···· ···· ··· ···· ···· ······	в	▲ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
Variables Material Properties Sheet Metal Drawing Advanced Drawing API	•	< Ln 1 Col 1 OK Cancel





22. In the Edit Rule dialog box, from the Wizards tab, click on Parameter Limits.

- The iLogic Limits Wizard dialog box appears.
- Enter Name equal to HoleDiameter.
- Enter Max. Value equal to 50.
- Enter **Min. Value** equal to **10**.

iLogic Lin	nits Wizard				8
Parame Name:	ter HoleDiameter	Max. Value: Min. Value:	50 10		
Message	es				
Max. Vio	Diation		litle:	Maximum Value Rule	-1
"The ma	ximum value allowed for lue will be automatically o	this paramete corrected to th	rıs: ~& H e maximu	ioleDiameter & vbCr & .m."	
Min. Vio	lation		Title:	Minimum Value Rule	
"The mir "The val	nimum value allowed for i ue will be automatically o	this parameter corrected to th	is: "&H e minimu	ioleDiameter & vbCr & m."	
Default	Message		A	close	

- Click Apply.
- An **If-Then-Else** statement is generated in the program space according to the parameters entered in the wizard.

Model Options Search and Replace Wit	Parameters Names	
$ \begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & $	Parameter	Equation
③ □ メ □ 10 (14)	Ē│ Ξ ≌│ IfThenEnd If ▼ Keywords ▼ Operators ▼│ @	
If HoleDiameter < 10 HoleDiameter = 10 MessageBox.Show("The min	nimum value allowed for this parameter is: " & H	oleDiameter &
ElseIf HoleDiameter > 50 ' HoleDiameter = 50 MessageBox.Show("The ma: End If	Then ximum value allowed for this parameter is: " & Ho	leDiameter &

- Click **Close** to exit the wizard.
- Click **Ok** to save and exit the rule.



23. Change the HoleDiameter parameter in the Parameters dialog box.

- Set HoleDiameter to 5.
- The Minimum Value Rule warning dialog is displayed.

Param	eter Name		Unit/	Equation		Nominal	Drivi	Tol.	Mod	Key		Comment
Mo	del Parameters											
E.	Thickness		mm	60 mm		60.000		0	60			
	HoleDiameter		mm	5	•	50.000	Но	•	50			
-	RowQuantity	Minimum V	alue R	ule					ſ	×		
	RowSpacing											
	ColumnQuantity		T I					10				
Sh	ColumnSpacing	- 🔀 -	The m	nimum vaiue ali lue will be autor	owed for the	is parame	the n	i 10	ım.			
Us	er Parameters				intreasity con	rected to	circ ii					
	Hole_Density	-										
	Add Numeric 🔻						ſ		ок			<< Less
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	LINK			-		Ľ		<u> </u>				Done
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- Click OK.
- The **HoleDiameter** parameter is reset to the minimum value and the model is updated accordingly.

	S											
Paramet	ter Name	Unit/	Equation			Nominal	Drivi	Tol.	Mod	Key		Comment
Mod	lel Parameters											
l Star	Thickness	mm	60 mm			60.000		0	60			
1	HoleDiameter	mm	10 mm			10.000	Ho	•	10			
F	RowQuantity	ul	9 ul			9.0000	Pat	0	9			
F	RowSpacing	mm	60 mm			60.000	Pat	0	60			
- (ColumnQuantity	ul	9 ul			9.0000	Pat	0	9			
AS-C	ColumnSpacing	mm	60 mm			60.000	Pat	0	60			
	r Parameters											
- H	Hole_Density	Text	High		•							
	Add Numeric 🛛 🕶	Update Update Update Update	te				Reset	Tolera		_]	<< Less Done
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- Set HoleDiameter to 55. •
- The Maximum Value Rule warning dialog is displayed. •



- Click OK.
- The **HoleDiameter** parameter is reset to the maximum value and the model is updated accordingly.

rameters									
Parameter Name	Unit/	Equation	Nominal	Drivi	Tol.	Mod	Key		Comment
- Thickness	mm	60 mm	60.000		0	60			
HoleDiameter	mm	50 mm	50.000	Ho	•	50			
RowQuantity	ul	9 ul	9.0000	Pat	0	9			
RowSpacing	mm	60 mm	60.000	Pat	0	60			
ColumnQuantity	ul	9 ul	9.0000	Pat	0	9			
ColumnSpacing	mm	60 mm	60.000	Pat	0	60			
Hole_Density	Text	(High 💌							
Add Numeric Image: Constraint of the second secon	e Upda	te		Reset	Tolera		_]	<< Less Done
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					_)	
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			/						

- 24. Close the file. Do NOT save.
 - The File result has been provided... it is named *Assignment1_with_rule.ipt*