

Chapter-5

CONDITIONS

In this chapter we will look **Conditions** in more detail. We will focus on

- if
- if ... else
- if ... else if ... else



Our daily life is full of decisions we take.

These decisions are like

- ♣ What to eat in dinner
- ♣ What to wear in a wedding

IF is “अगर ” and **ELSE** is “ वरना ”
in
Hindi Language.

These decisions are derived from certain conditions like

- ♣ What to eat in dinner – If in **mood of party**, order Pizza
- ♣ What to wear in a wedding – If **day time**, wear ethnic dress or **else if night time**, wear western dress.

Just like in general language

Computers make decisions based on these IF and ELSE conditions of a software.

In a common form, these conditional statements in Coding or Programming is a way to tell the computer that

- if the **condition** is **true**
 - o do **this**
- else, if the **condition** is **false**
 - o do a **different thing**

Important Note – In a computer program, a **condition** has to be something that a computer can decide whether True or False.

True Examples	False Examples
$5 > 2$	$5 * 2 == 12$
"S" in "Saaransh"	$A = 10, B = 20, A == B$
English has 26 alphabets	Week has 8 days
$6 - 2 == 4$	$6 + 2 == 6$

IF Condition

When you are just checking for a condition to be **True** or **False** and take decision based on it then you use **IF** condition.

Definition - IF a condition (_____) is TRUE then do this (_____) task

Definition - अगर ये (_____) सच है तो ये (_____) करो

Example – Big Bazaar gives additional discount to regular customer.

- Customer picks up items (Cookies, Rice etc) to purchase
- Customer goes to billing counter
- Biller (Amit) scans the items and the total bill of customer is calculated to be Rs 500
- Biller (Amit) checks if the customer is regular, using mobile number
 - o If customer is (==) Regular
 - o Discount of Rs = 50
 - o Final Bill = 450
- Biller collects amount puts items into a bag and hands over to the customer with "Thankyou !"

IF Condition – DIY (Do it yourself)

♣ Think about weather and fill in the blank

- If it is summer then wear _____
- If it is winter then wear _____
- If it is rainy then wear _____

♣ Think about your school scenarios and fill in the blank

- If you have a homework then _____
- If it is Sunday then _____
- If it is Exam day then _____

♣ Think about daily electronic gadgets and fill in the blank

- If mobile phone battery is low then _____
- If CapsLK key is turned ON during letter typing then _____
- If you are not going to use a computer for a short period then _____
- If the lights are ON in an empty room then _____
- If you press Ctrl+P in your computer system then _____
- If you press Ctrl+C in your computer system then _____
- If you set AC temp to 18 then _____
- If SUBMIT button is clicked in iCodeT learning software then _____
 - If answer is RIGHT then _____
 - If answer is WRONG then _____

IF .. ELSE Condition

So, in the last topic we covered singular condition i.e, IF condition. We taught computers to do when a certain condition is true.

IF .. ELSE condition is **expansion** to **IF** condition where along with “What to do” when condition is **TRUE**, we also mention “What to do” when condition is **FALSE**.

Definition - IF a condition (_____) is TRUE then do this (_____) task ELSE do that (_____)

Definition - अगर ये (_____) सच है तो ये (_____) करो वरना ये (_____) करो

Example – Big Bazaar gives additional discount to regular customer.

- Customer picks up items (Cookies, Rice etc) to purchase
- Customer goes to billing counter
- Biller (Amit) scans the items and the total bill of customer is calculated to be Rs 500
- Biller (Amit) checks if the customer is regular, using mobile number
 - If customer is (==) Regular
 - Discount of Rs = 50
 - Final Bill = 450
- Else Biller (Amit) informs the customer that regular customer discount is not applicable
- Biller collects amount, puts items into a bag and hands over to the customer with “Thankyou !”

IF .. ELSE Condition – DIY (Do it yourself)

♣ Think about Exams and fill in the blank

- If you pass your exam then you will get _____ else _____
- If you pass your exam with distinction then you will get _____ else _____

♣ Think about daily electronic gadgets and fill in the blank

- If mobile phone battery is low then _____ else _____
- If CapsLK key is turned ON during letter typing then _____ else _____
- If SUBMIT button is clicked in iCodeT learning software then _____
- If answer is RIGHT then _____ else _____

♣ T20 Cricket – Score board 131/9 (19.5). Need 2 to Win. Last ball of the match.

- If batsman hits 2 or more runs then _____ else _____
- If batsman hits more than 2 runs then _____ else _____
- If batsman gets out then _____ else _____
- If batsman hits 1 or less runs then _____ else _____

IF .. ELSE IF .. ELSE Condition

IF .. ELSE IF .. ELSE condition is **expansion** to IF .. ELSE condition where we can mention “What to do” in various different conditions.

This is called **Nested if-else statements**. They are nothing but a series of ifs and else combined together and used within another.

Definition –

IF a condition (_____) is TRUE then do this (_____) task
ELSE IF this condition (_____) is TRUE then do this (_____) task
ELSE IF this condition (_____) is TRUE then do this (_____) task
ELSE do this (_____) task

Definition –

अगर ये (_____) सच है तो ये (_____) करो वरना ये (_____) करो
वरना ये (_____) सच है तो ये (_____) करो
वरना ये (_____) सच है तो ये (_____) करो
वरना ये (_____) करो

Example – Big Bazaar gives additional discount to regular customer.

- Customer picks up items (Cookies, Rice etc) to purchase
- Customer goes to billing counter
- Biller (Amit) scans the items and the total bill of customer is calculated to be Rs 500
- Biller (Amit) checks if the customer is regular, using mobile number
 - o If customer is (==) Regular
 - o Discount of Rs = 50
 - o Final Bill = 450
- Else IF Biller (Amit) informs the customer that you are not a regular customer or member. Do you want to apply for membership for discount.
 - o If Yes
 - o Enrol for membership
 - o Apply discount of Rs = 50
 - o Final Bill = 450
- Else Biller (Amit) informs the customer that regular customer discount is not applicable
- Biller collects amount, puts items into a bag and hands over to the customer with Thankyou !

IF .. ELSE IF .. ELSE Condition – DIY (Do it yourself)

- ♣ Think about buying a new phone. Depending upon the budget, you will choose the brand of phone. Fill the blanks accordingly
 - If (budget ≤ 10000) then you will buy _____
else if (budget > 10000 but ≤ 20000) then you will buy _____
else if (budget > 20000 but ≤ 50000) then you will buy _____
else you will buy _____
- ♣ School Open or Closed Today. Fill the blanks accordingly
 - If (Today == Sunday) then school is _____
else if (Today == Public holiday) then school is _____
else if (Today == School holiday) then school is _____
else school is _____

Let's Understand



We will understand these concepts in detail by the example of tossing coin in an IPL (Indian Premier League) cricket match.



Background

- Match is in between **Mumbai Indians (MI)** and **Chennai Super King (CSK)**
- MI captain is Rohit Sharma and CSK captain is MS Dhoni

Scenario 1 – MI's captain Rohit Sharma tossing the coin and CSK captain Dhoni chooses HEADS

- Rohit Sharma tossing coin
- MS Dhoni calls Heads
- If heads
 - Then CSK wins the Toss

Scenario 2 – MI's captain Rohit Sharma tossing the coin and CSK captain Dhoni chooses HEADS

- Rohit Sharma tossing coin
- MS Dhoni calls Heads
- If heads
 - Then CSK wins the Toss
- Else
 - MI wins the toss

Scenario 3 – MI's captain Rohit Sharma tossing the coin and CSK captain Dhoni chooses HEADS

- Rohit Sharma tossing coin
- MS Dhoni calls Heads
- If heads
 - Then CSK wins the Toss
- Else IF tails
 - MI wins the toss
- Else
 - Wrong toss

Important Note –

As you can see a simple example like *tossing a coin* can be represented in various ways.

Computer simply does what a program (software) tells it to do.

Thus to avoid confusion, it is essential to write programs with explicit outcome based on different conditions.

➤ Mathematical Operations (+, -, /)

- X = 5
- Y = 7
- Result = 0
- Available Choice = "+", "-", "/"
- if Choice == "+"
 - then Result = X + Y
- if Choice == "-"
 - then Result = X - Y
- if Choice == "/"
 - then Result = X / Y

➤ Mathematical Operations (+, -)

- X = 5
- Y = 7
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- Available Choice = "+", "-"
- if Choice == "+"
 - then Result = X + Y
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➤ Mathematical Operations (+, -, /)

- X = 5
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- Result = 0
- Available Choice = "+", "-", "/"
- if Choice == "+"
 - then Result = X + Y
- else if Choice == "-"
 - then Result = X - Y
- else if Choice == "/"
 - then Result = X / Y
- else
 - Wrong Choice

➤ These are some more examples

- Which is the best choice to use in the software from these examples

Practice Scenarios

1. IPL Scenario

Chennai Super Kings has scored run of 149/9 in 20 overs against Mumbai Indians.

- Mumbai Indians needs 150 Runs to Win in 20 overs
- Current Score of MI = 148/8 in 19.5 overs
- Write down the probable outcomes using different conditions using if , if..else , if..elseif..else

2. iCodeT learning software scenario

- Assume that you are in Question page
- Write down the probable outcomes when the answer is selected and the Submit button is clicked

3. Subtract scenario

- Subtract a given number by 2 until the number becomes 0
- Let's say a given number is 10. Then check a condition whether the number has become 0. If not then subtract by 2. Continue this cycle.