003: Conditionals

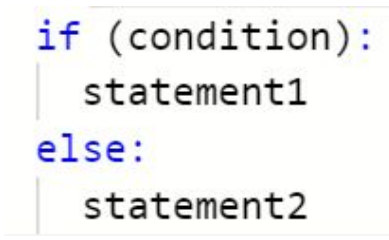
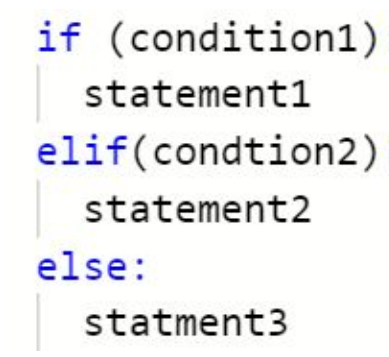
Learning Outcome:	Boolean variable,Conditionals, Logical Operators

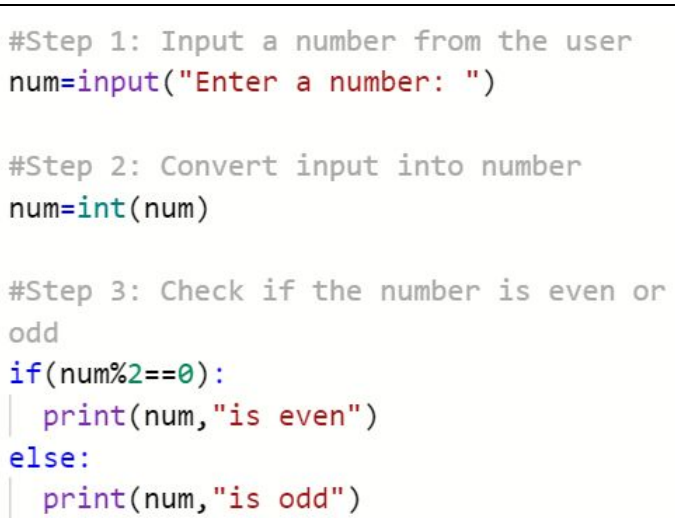
Definitions/Concepts	
Boolean Variables	• The value of any condition can be either True or False • These values when stored in any variable is called Boolean Variable • The values of Boolean Variable are: **True** and **False** ***Note:*** *The first letter of True and False must be in upper case.*
Logical Operators	The operators used to connect two conditions are called Logical operators. • **and** : Returns True only if both conditions are True • **or** : Returns True if either of the conditions are True • **not** : Return True if condition is False and vice versa
Conditional Statements	The conditional statements in Python are: • **if** statement • **if else** statement • **elif** statement

type() function		

Syntax:
`type(var)`
	The **type()** function returns the data type of the variable.	`>>> var=10`
		`>>> type(var)`
		`<class 'int'>`

if statement		
Syntax:	`if (condition):` `  statement`	The **statement** is executed only if the value of **condition** is **True**

if else statement		
Syntax:		The **statement1** is executed only if the value of **condition** is **True** otherwise if the value of **condition** is **False** then **statement2** is executed
elif statement		
Syntax:		The **statement1** is executed if the value of **condition1** is **True** otherwise **condition2** is checked, if it is true **statement2** is executed, if that is false again, then **statement3** is executed.
We can add as many elif statements as we need, the else part will be executed if none of the conditions are true.		

Activity links and Solutions	
[Student Activity 1: Conditionals](#) Write a program to check if a number is even or odd	
	• **input()** function takes input from the user. *Note: Datatype of this input is always String* • **int()** function converts the String input into integer. • The condition **num%2==0** checks if the num is divisible by 2 or not.

Student Activity 2: Relational and Logical Operators

```
num=input("Enter a number")
num=int(num)
```

#Q1: Write a condition to check if "num" is odd

```
if(num%2!=0):
  print(num,"is odd")
```

#Q2: Write a condition to check if "num" is greater than 100

```
if(num>100):
  print(num,"is greater than 100")
```

#Q3: Write a condition to check if "num" is an odd number greater than 100

```
if((num%2!=0)and(num>100)):
  print(num,"is odd number greater than 100")
```

#Q4: Write a condition to check if "num" is either an odd number of greater than 100

```
if((num%2!=0)or(num>100)):
  print(num,"is either an odd number or a number
  greater than 100")
```

Student Activity 3: Calculator

```
a=input("Enter a number: ")
a=float(a)

b=input("Enter another number: ")
b=float(b)

c=input("Enter 1 for Sum \n Enter 2
Difference \n Enter 3 for Product \n
Enter 4 for Quotient\n Enter 5 for
Remainder\n")
```

The input by user: **a** and **b** are of the data type String.

The function **float()** converts them from String to float.
This is called Typecasting.

```
if(c==1):
    print("Sum:",a+b)
elif(c==2):
    print("Difference",a-b)
elif(c==3):
    print("Product",a*b)
elif(c==4):
    print("Quotient",a/b)
elif(c==5):
    print("Remainder",a%b)
else:
    print("Invalid input")
```

According to the user's choice, different mathematical operations will be done on the numbers a and b, but if the user's choice is anything other than 1 to 5 then the message "Invalid input" will be displayed.

Student Activity 4: Report Card

#Take input as the grade from the student and display the percentage range they scored according to the table given.

Percentage	Grade
80-100	A
60-80	B
40-60	C
0-40	Fail

If the grade of a student is **B** then the percentage range of marks they scored is **60-80%**

```
grade=input("Enter your grade")

if(grade=='A'):
  print("You scored 80-90%")
elif(grade=='B'):
  print("You scored 60-80%")
elif(grade=='C'):
  print("You scored 40-60%")
elif(grade=='D'):
  print("You scored less than 40%")
else:
  print("Invalid grade!")
```

Do you know??

Python and its source code are available to the public for free; there's no need to buy a costly license.