Decision Statements

- Statement vs Expression
- Relational Operators
- Logical Operators
- If statement and its variants
- Nesting of statements

Statement vs Expression

- **Expression** is something that evaluates to a value
- **Statement** is any line of code that can be executed by the python interpreter.
- Since expressions evaluate to value, so they can appear on the **rhs** of an **assignment** operator **(=)**.

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Relational Operators

- These operators return **True** or **False** depending on truth or false value of the relation

  Operators:

  >, <, >=, <=, ==, !=

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Logical Operators

- These operators evaluate **Truth** and **False** values and return **True** or **False** depending logic of the operator

  3 logical Operators:

  and, or, not

- **and** and **or** are *binary* operator, whereas **not** is a *unary* operator

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True

X	Y	X and Y
False	False	False
False	True	False
True	False	False
True	True	True

X	Y	X or Y
False	False	False
False	True	True
True	False	True
True	True	True

X	not X
False	True
False	False

- x = 2
  y = x>1 and x < 100
  print(y)
- x = -100
  y = x>1 and x < 100
  print(y)
- x = 2
  y = x>1 or x < 100
  print(y)
- x = 10
  y = x>1 or x < 100
  print(y)
- x = 2
  y = x>1
  print(y)
  y = not y
  print(y)

Simple If Statement

- if condition_1:
  statement_block_1 # notice the indentation (spacing) before the block
- The code referred to as statement_block_1 gets executed only if the condition evaluates to true else gets skipped.
- WAP to print absolute value of a number

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Simple If-else Statement

- if condition_1:
  statement_block_1
  else:
  statement_block_2
- The code referred to as **statement_block_1** gets executed only ***if*** the condition evaluates to true ***else*** **statement_block_2** gets executed.
- WAP to input 2 number and print the larger one
- WAP to print whether number is even or odd
- WAP to check if a string is **palindrome** or not (**naman** is palindrome, **gaurav** is not)

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if-elif-else Statement

- if *condition_1*:
  statement_block_1
  elif *condition_2*:
  statement_block_2
  …
  …
  else: # optional
  statement_block_n

- WAP to check if no is positive, negative or zero.
- WAP to input age and print the respective text depending on the age ranges as present in the table.

Age	Text To display
0-12	Child
13-17	Teen
18-50	Adult
51-100	Senior Citizen
age > 100	All the Best

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Nested if-else statements

- if *condition_1*:
  if condition_2:
  block_1
  else:
  block_2
  elif …
  …
  …
- When a **if** block appears within another if block (can be inside **elif** or **else** or both), the inner block is said to be nested inside the outer block.

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Questions

- WAP to input 2 numbers and check whether the first is divisible by the second and print true or false depending on the divisibility.
- WAP to print the value of the largest of 3 numbers taken as input from the user.
- In the palindrome example, make the code case insensitive.
  i.e. **N**ama**n** should also be treated as a palindrome (**HINT:** first convert to either upper or lower case).
- WAP to input the sides of a triangle and print whether equilateral(all sides equal), isosceles (2 sides equal), or scalene (no sides equal).

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