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| Topic | Example | Use |
| A program is set of instructions | print("Hellow World") |  |
| Arithmetic operators | 1+2 - 3\*4 /5 | Calculation |
| Comment (to end of line) | # One line comment | Short non-executing comment |
| Variables | a total customer\_name | Store values |
| Arithmetic: raise to power | 2\*\*4 | Compound interest, probability |
| Comparison | 2>1, 2<3, 4==4, 5>=4, 6<=7, 8!=9 | Testing for value |
| Character strings | "Ray" 'Smith' | Names |
| Multiline strings | """  First line  Second line  Third line  """ | Long strings  Doc (Documentation) String |
| String comparison | "b">"c", "d"<"e","fg" =="fg", "hi">="h", "j"<="jk", "lmn"!="lm" | Testing for string value |
| Variables | Top = 10  client ="Ray"  salary\_mth = 5000.0 | Storage |
|  |  |  |
| Variable name rules | Good: first\_name Bad: last name |  |
| assignment | n = n + 1 | Store value  Store value after changes |
| String manipulation | "Ray" + " " + "Smith" | Creating complex strings |
| print | Print("sum:", 2 + 2) | Print string, values, calculations |
| Multiple statements on a line using semicolon(;) | print(1); print(2) | Shorthand for simple statements |
| Syntax errors | 1 + "one" | Python tries to explain |
| Decisions: If statement | If 2 > 1:  print("2 > 1") | Test for conditions |
| Decisions: if with all outcomes | n = 2  if n > 3:  print("n:", n, " matches if condition))  elif n > 2:  print("n:", n, " matches this test"))  else:  print("n:", n, " something other") | Testing, using multiple outcomes |
| Looping: while statement | n = 0  **while** n < 10:  print(n)  n = n +1 | Repeat action while condition is met |
| Looping: for statement  **Note** that:  1. "*variable* **in** *list*"  repeatedly sets *variable* to successive members in *list*  *2. range(N) returns a list of numbers from 0 to N-1.* | **for** n in range(10):  print(n) | Repeat action for values in list |
| Looping: alternative flow | **for** n in range(10):  if n % 2 == 0:  continue # skip if even  if n % 5:  break # quit loop if div by 5  print(n) | Change loop operation on special conditions |
| List: a group of things in order | list1 = [1, 2, 3, 4]  for n in list1:  print(n, end=":") | List of items used as an ordered group |
| List: getting the nth item (starting with 0 as first) | print("list1[2]:", list1[2]) | Accessing any particular item from ordered list |
| List: of strings | color\_list = ["red", "orange", "yellow", "green"]  for color in color\_list:  print(color) | List of strings |
| List: adding item to end | color\_list.append("indigo")  color\_list.append("violet")  for color in color\_list:  print(color) | Adding item to end of list, using list member function append |
| List: assignment | list2 = list1  print("list2:", list2) | Assign one list to another list. |
| List: removing element off end (last element appended) | end\_elm = list1.pop()  print("list1.pop:", end\_elm, "list1:", list1) | Remove end of list |
| Get input from user, through keyboard, with prompt | inp = input("Enter Name:")  print("Your name:", inp) | Get user input |
| Convert character string into integer | val = "42"  print("val:", val, " val +1:", int(val)+1) | Converting input which is a string of characters, into an integer |
| Turtle graphics | from turtle import \*  color("blue")  circle(100) | Graphic drawing |