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| **Python** | **Java** |
| import math | import java.lang.Math; |
| # comment | // comment |
| x = 4 | int x = 4; |
| x = 5.0 | double x = 5.0; |
| x+=1 | x++; |
| 4 \* 5 | 4 \* 5 |
| 4 / 5 | 4.0 / 5.0  |
| 4 // 5 | 4 / 5 |
| math.sin(1) | Math.sin(1) |
| math.pi | Math.PI |
| x < 5 and is\_pink | x < 5 && isPink |
| not is\_pink | !isPink |
| s = None | s = null; |
| "s" is str | "s" == str |
| "s" == str | "s".equals(str) |

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| **Python** | **Java**  |
| scores = list() – OR – scores = [] | ArrayList scores = new  ArrayList<Integer>(); |
| scores.append(1) | scores.add(1) |
| my\_list = [1, 'hi', 5.0] |  |
| my\_tuple = (1,'hi',5.0)# Tuples are immutable# Can't edit | // No tuples in Java, but // available in Guava…// "ImmutableList" |
| a = [1,2,3,4,5] | long[] a = {1,2,3,4,5}; |
| x = a[0] # x is an int  | long x = a[0]; |
| y = a[2:4] # y is a list | # not possible for an array |
| y = scores[1:3] | scores = scores.subList(1,3); |

# Lists and Tuples

# Arithmetic and Logic

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| **Python** | **Java** |
| name = 'peter' – OR – name = "peter" | String name = "peter"; |
| # strings are immutable | // strings are immutable |
| s = 'a'# no independent# character type in Python | char c = 'a'# can only store one char# in a char |
| s = "abcde"  | String s = "abcde"; |
| c = s[0] # c is a str! | char c = s.charAt(0); |
| b = s[2:4] # b is a str | String b = s.substring(2,4); |
| if isinstance(c,str): | if(b instanceof String) { |
| if type(c) is str: | if(b.getClass() ==  String.class) |
| length = len(s) | int len = s.length(); |
| d = s[-1] | char d = s.charAt(len-1) |
| b = s[-2:-1] | b = s.substring(len-2,len-1) |
| b = s[-2:] | b = s.substring(len-2,len) |
| b = s[:2]– OR – b = s[0:2] | b = s.substring(0,2) |

# Strings

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| **Python** | **Java** |
| if a < b: comp = 'less than'elif a == b: comp = 'equal to'else: comp = 'greater than'print("a is",comp,"b") | if (a < b) { comp = "less than";} else if (a == b) { comp = "equal to";} else { comp = "greater than";}*S.o.pl*("a is "+comp+" b") |
| x = 0while x < 10: x += 1 | long x = 0;while (x < 10) { x++} |
| for x in range(5,10): print(x) | for(int x = 5; x<10; x++) { System.out.println(x)} |
| y=f(x)while not is\_good(y): y=f(x) | do { y=f(x)} while(!isGood(y)) |

# Control Structures

# Encoding

# Control Structures

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| **Python** | **Java** |
| ***Specify bits in a byte*** | ***Specify bits in a byte*** |
| b = b'\xff' | byte b = 0xff; |
| ***Specify bits in an int*** | ***Specify bits in an int*** |
| i = 0x7fffffff | int i = 0x7fffffff; |
| ***Parsing and formatting*** | ***Parsing and formatting*** |
| s = '1' | String s = "1"; |
| i = int(s) | int i = Integer.parseInt(s); |
| s = str(i) | s = ""+i; |
| ***Get bits used to store an int*** | ***Get bits used to store an int*** |
| b = i.to\_bytes(2,'big') | //Use ByteBuffer or streams |
| ***Load bits into an int*** | ***Load bits into an int*** |
| i2=int.from\_bytes(b,'big') | //Use ByteBuffer? |
| ***Encoding/Decoding Unicode*** | ***Encoding/Decoding Unicode*** |
| s2 = s[0] | char c = s.charAt(0); |
| i = ord(s2) | long i = c; |
| s3 = chr(i) | char c3 = i; |

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| **Python** | **Java** |
| def greet(name): return "Hello, " + name | public String greet(String name) { return "Hello, " + name} |
| def greet(name): """ :param name: The name … :return: A greeting …  """ return "Hello, " + name | /\*\* @param name The name … @return A greeting …\*/public String greet(String name) { return "Hello, " + name} |
| try: raise Exception('Ow!')except ZeroDivisionError: print('Division by zero')finally: print('Cleanup') | try { throw new Exception("Ow!")} catch (ArithmeticException e) { *S.o.pl*("Division by zero")} finally { *S.o.pl*("Cleanup")} |

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| ***Get bits used to store an int*** |
| b = i.to\_bytes(length=2, byteorder='big') |
| ***Load bits into an int*** |
| i2 = int.from\_bytes(bytes=b, byteorder='big') |

# Python's Keyword Arguments