```
_____
### Original Python2 File:
### alter.py
for i in range(10):
 print i,
print
sql:
 CREATE TABLE new_Customers (
   name VARCHAR(100)
   last VARCHAR(15),
   phone int,
   birthday int
 DATABASEPRINT
 ALTER TABLE new_Customers ADD gender VARCHAR(1)
 DATABASEPRINT
 ALTER TABLE new_Customers ALTER COLUMN gender INT
 DATABASEPRINT
 ALTER TABLE new_Customers DROP COLUMN birthday
 DATABASEPRINT
:sql
_____
### Converted Python File:
for i in range(10):
 print i,
print
print "Database:"
print "current record:0"
print "datatypes:{'new_Customers': {'phone': {'INT': -1}, 'birthday': {'INT': -1}, 'last':
'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}}"
print "new Customers:[]"
print "new_Customers_fields:['name', 'last', 'phone', 'birthday']"
print "triples:[]"
print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
print
print "Database:"
print "current_record:0"
print "datatypes:{'new_Customers': {'phone': {'INT': -1}, 'birthday': {'INT': -1}, 'last':
```

```
'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}, 'gender': {'VARCHAR': '1'}}}"
print "new_Customers:[]"
print "new_Customers_fields:['name', 'last', 'phone', 'birthday', 'gender']"
print "triples:[]"
print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
print "Database:"
print "current_record:0"
print "datatypes:{'new_Customers': {'phone': {'INT': -1}, 'birthday': {'INT': -1}, 'last':
'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}, 'gender': {'INT': -1}}}"
print "new_Customers:[]"
print "new_Customers_fields:['name', 'last', 'phone', 'birthday', 'gender']"
print "triples:[]"
print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
print
print "Database:"
print "current_record:0"
print "datatypes:{'new_Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name':
'VARCHAR': '100'}, 'gender': {'INT': -1}}}"
print "new_Customers:[]"
print "new_Customers_fields:['name', 'last', 'phone', 'gender']"
print "triples:[]"
print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
print
### Console Output:
0 1 2 3 4 5 6 7 8 9
Database:
current_record:0
datatypes:{'new_Customers': {'phone': {'INT': -1}, 'birthday': {'INT': -1}, 'last': {'VARCHAR': '15'},
'name': {'VARCHAR': '100'}}}
new_Customers:[]
new_Customers_fields:['name', 'last', 'phone', 'birthday']
triples:[]
valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
Database:
current_record:0
datatypes:{'new_Customers': {'phone': {'INT': -1}, 'birthday': {'INT': -1}, 'last': {'VARCHAR': '15'},
'name': {'VARCHAR': '100'}, 'gender': {'VARCHAR': '1'}}}
new_Customers:[]
new_Customers_fields:['name', 'last', 'phone', 'birthday', 'gender']
triples:[]
valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
Database:
current_record:0
datatypes:{'new_Customers': {'phone': {'INT': -1}, 'birthday': {'INT': -1}, 'last': {'VARCHAR': '15'},
'name': {'VARCHAR': '100'}, 'gender': {'INT': -1}}}
```

```
new Customers:[]
new_Customers_fields:['name', 'last', 'phone', 'birthday', 'gender']
triples:[]
valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
Database:
current record:0
datatypes:{'new_Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR':
100'}, 'gender': {'INT': -1}}}
new Customers:[]
new_Customers_fields:['name', 'last', 'phone', 'gender']
triples:[]
valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
______
### Original Python2 File:
### create.py
for i in range(10):
  print i,
print
  CREATE TABLE neverBuild ( blah VARCHAR(5) )
  INSERT INTO neverBuild VALUES ('NOPE')
:sql
sql:
  CREATE TABLE Customers (
    name VARCHAR(100),
    last VARCHAR(15),
    phone int,
    birthday VARCHAR(20)
  CREATE TABLE Noncustomers (
    name VARCHAR(100)
    last VARCHAR(15),
    phone int
  CREATE TABLE Housing (
    person VARCHAR(100),
    floor int,
    room VARCHAR(4),
    phone int
:sql
sql: DATABASEPRINT :sql
```

```
### Converted Python File:
 for i in range(10):
  print i,
 print "Database:"
 print "Customers:[]"
 print "Customers_fields:['name', 'last', 'phone', 'birthday']"
 print "Housing:[]"
 print "Housing_fields:['person', 'floor', 'room', 'phone']"
 print "Noncustomers:[]"
 print "Noncustomers_fields:['name', 'last', 'phone']"
 print "current_record:0"
 print "datatypes:{'Noncustomers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name':
'VARCHAR': '100'}}, 'Customers': {'phone': {'INT': -1}, 'birthday': {'VARCHAR': '20'}, 'last':
'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}, 'Housing': {'person': {'VARCHAR': '100'}, 'room':
'VARCHAR': '4'}, 'phone': {'INT': -1}, 'floor': {'INT': -1}}}"
 print "triples:[]"
 print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
 print
 ______
 ### Console Output:
 0 1 2 3 4 5 6 7 8 9
 Database:
 Customers: []
 Customers_fields:['name', 'last', 'phone', 'birthday']
 Housing:[]
 Housing_fields:['person', 'floor', 'room', 'phone']
 Noncustomers: []
 Noncustomers_fields:['name', 'last', 'phone']
 current_record:0
 datatypes:{'Noncustomers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR': '100'
}, 'Customers': {'phone': {'INT': -1}, 'birthday': {'VARCHAR': '20'}, 'last': {'VARCHAR': '15'}, 'name'
{'VARCHAR': '100'}}, 'Housing': {'person': {'VARCHAR': '100'}, 'room': {'VARCHAR': '4'}, 'phone': {
INT': -1}, 'floor': {'INT': -1}}}
triples:[]
 valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 ______
 ######################
```

```
### Original Python2 File:
### delete.py
for i in range(10):
 print i,
print
sql:
 CREATE TABLE new Customers (
    name VARCHAR(100),
   last VARCHAR(15),
    phone int,
    birthday int
  INSERT INTO new_Customers VALUES ('Lake', 'Travis', 911, 1)
  INSERT INTO new Customers VALUES ('Absente', 'Mee', 302740, 8)
  INSERT INTO new Customers VALUES ('Burbple', 'Durple', 8837232, 7)
  INSERT INTO new_Customers VALUES ('Hes', 'ABob', 8675309, 2)
  INSERT INTO new_Customers VALUES ('See', 'Mee', 302740, 1)
  INSERT INTO new_Customers VALUES ('Jose', 'Nosey', 928223, 2)
  INSERT INTO new_Customers VALUES ('Miggh', 'Tyfine', 124967, 2)
  PRINT SELECT * FROM new_Customers
 DELETE FROM new Customers WHERE last='Nope'
  PRINT SELECT * FROM new Customers
 DELETE FROM new_Customers WHERE phone='ABob'
  PRINT SELECT * FROM new Customers
 DELETE FROM new_Customers WHERE phone=8837232
 PRINT SELECT * FROM new Customers
 DELETE FROM new Customers WHERE last='ABob'
:sql
sql:
 PRINT SELECT * FROM new_Customers
 DELETE FROM new Customers WHERE last='Mee' AND phone=98478
 PRINT SELECT * FROM new Customers
 DELETE FROM new_Customers WHERE last='Knee' AND phone=302740
 PRINT SELECT * FROM new Customers
 DELETE FROM new_Customers WHERE last='Mee' AND phone=302740
 PRINT SELECT * FROM new Customers
 DELETE FROM new Customers
:sql
```

```
_____
### Converted Python File:
for i in range(10):
  print i,
print
print 'new Customers:'
print '
                                                            birthday
print
          name
                           last
                                             phone
print '
print '
                                             911
          Lake
                            Travis
                                                              1
print
          Absente
                           Mee
                                             302740
                                                              8
print '
          Burbple
                           Durple
                                             8837232
                                                               7
print
                           ABob
                                             8675309
                                                               2
          Hes
print
          See
                           Mee
                                             302740
                                                               1
print '
          Jose
                                             928223
                                                               2
                           Nosey
print '
          Miggh
                            Tyfine
                                             124967
print
      'new_Customers:'
print
          name
                            last
                                             phone
                                                              birthday
print
print
                                             911
          Lake
                            Travis
print
          Absente
                           Mee
                                             302740
                                                              8
print
                           Durple
                                                               7
          Burbple
                                             8837232
print
                                                               2
          Hes
                           ABob
                                             8675309
print
          See
                           Mee
                                             302740
                                                               1
print
                                                               2
          Jose
                           Nosey
                                             928223
print
                           Tyfine
          Miggh
                                             124967
print
      'new Customers:'
print
print
                                                              birthday
          name
                            last
                                             phone
print
print
          Lake
                           Travis
                                             911
                                                              1
print
          Absente
                                             302740
                                                              8
                           Mee
print
          Burbple
                           Durple
                                             8837232
print
          Hes
                           ABob
                                             8675309
                                                               2
print
          See
                           Mee
                                             302740
                           Nosey
print
          Jose
                                             928223
                                                               2
print
          Miggh
                           Tyfine
                                             124967
print 'new_Customers:'
print
print
          name
                            last
                                             phone
                                                              birthday
print
print
                           Travis
                                             911
                                                              1
          Lake
                                                              8
print
          Absente
                           Mee
                                             302740
                            ABob
                                             8675309
print
          Hes
```

print ' 8 Absente Mee 302740 print ' See Mee 302740 1 print ' Jose Nosey 928223 2 print ' Miggh Tyfine 124967 print

print 'new_Customers:'

print ' |----print name last phone birthday print print Lake Travis 911 1 print Jose Nosey 928223 2 print ' Miggh Tyfine 124967 print

Console Output:

0 1 2 3 4 5 6 7 8 9

new_Customers:

name | last | phone | birthday |

Joaquin Casares		Python2: The SQL	(Documentation)	Matthew Clarkson
Lake	Travis	911	1	
Absente	Mee	302740	8	l
Burbple	Durple	8837232	7	l
Hes	ABob	8675309	2	l
See	Mee	302740	1	l
Jose	Nosey	928223	2	l
Miggh	Tyfine	124967	2	l
				-
<pre>new_Customers:</pre>				
· ·				_
name	last	phone	birthday	
				-
		911	1	
Absente	Mee		8	
Burbple 	Durple	8837232	7	
Hes	ABob 	8675309	2	
See	Mee	302740	1	
Jose	•	928223	2	
	Tyfine	124967	2	
				-
new_Customers:				
•		phone		- I
Hallie	iast	priorie	Dificilialy	
Lake	Travis	911	1	- I
Absente		302740	8	
Burbple	Durple	8837232	7	
Hes	ABob	8675309	2	
See	Mee	302740	1	
Jose	Nosey	928223	2	i
Miggh	Tyfine	124967	2	i
				-
new_Customers:				
				-
name	last	phone	birthday	
				-
Lake	Travis	911	1	
Absente	Mee	302740	8	
Hes	ABob	8675309	2	
See	Mee	302740	1	
Jose	Nosey	928223	2	
Miggh	Tyfine	124967	2	
new_Customers:				
			1 1 2 2 2	
name	last	phone	birthday	
	T	L 011	I 4	1
Lake	Travis	911	1	
Absente	Mee	302740	8	
See	Mee	302740	1	
Jose	Nosey	928223	2	
Miggh	Tyfine	124967	2	

```
______
new_Customers:
                    last
                                     phone
                                                      birthday
   Lake
                    Travis
                                     911
   Absente
                    Mee
                                     302740
  See
                    Mee
                                     302740
                                                      1
  Jose
                    Nosey
                                     928223
                    Tyfine
   Miggh
                                     124967
                                                      2
new Customers:
                                                      birthday
                  last
                                     phone
   Lake
                    Travis
                                     911
                                                      8
  Absente
                    Mee
                                     302740
   See
                    Mee
                                     302740
                                                      2
   Jose
                    Nosey
                                    928223
                  Tyfine
   Miggh
                                   124967
new Customers:
                    last
                                     phone
                                                      birthday
   name
                    Travis
   Lake
                                     911
                    Nosey
   Jose
                                     928223
                    Tyfine
   Miggh
                                     124967
### Original Python2 File:
### drop.py
#####################################
for i in range(10):
 print i,
print
sql:
 CREATE TABLE Customers (
    name VARCHAR(100) ,
   last VARCHAR(15),
    phone int
  INSERT INTO Customers VALUES ('Phil', 'Cannata', 7735647)
  INSERT INTO Customers VALUES ('Matthew', 'Clarkson', 9875643)
  INSERT INTO Customers VALUES ('Joaquin', 'Casares', 3451878)
  INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 9345879)
  INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 5123789)
```

```
INSERT INTO Customers VALUES ('Joaquin', 'Guadalupe', 8845748)
 PRINT SELECT * FROM Customers
 DROP INDEX name ON Customers
 PRINT SELECT * FROM Customers
 DROP INDEX blah ON Customers
 DROP TABLE Nope
 DROP TABLE Customers
 DATABASEPRINT
:sql
### Converted Python File:
for i in range(10):
 print i,
print
print 'Customers:'
print '|-----
print '| name
                  last
                               phone
print ' |-----
print ' Phil
                                  7735647
                   Cannata
print ' Matthew
                  Clarkson
                                9875643
                  Casares
print ' Joaquin
                                3451878
print '
       Joaquin
                   Joaquin
                                9345879
print '| Joaquin
                   Joaquin
                                5123789
print '
       Joaquin
                  Guadalupe 8845748
print '|-----
print 'Customers:'
print ' |------
print '| last
print '|-----'
print '| Cannata
                 7735647
print ' Clarkson
                  9875643
print ' | Casares
                   3451878
print '| Joaquin
                  9345879
print ' Joaquin
                  5123789
print ' | Guadalupe
                 8845748
print '|-----'
print "Database:"
print "current_record:6"
print "datatypes:{}"
print "triples:[]"
print "valid datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
print
```

```
### Console Output:
Field: blah does not exist. Table unchanged.
Table: Nope does not exist. Database unchanged.
0 1 2 3 4 5 6 7 8 9
Customers:
_____
                 last
                                  phone
  Phil
                  Cannata
                                  7735647
  Matthew
                  Clarkson
                                  9875643
  Joaquin
                  Casares
                                  3451878
  Joaquin
                  Joaquin
                                  9345879
  Joaquin
                  Joaquin
                                  5123789
  Joaquin
                  Guadalupe
                                 8845748
Customers:
  last
                  phone
  Cannata
               7735647
  Clarkson
                  9875643
  Casares
                  3451878
  Joaquin
                9345879
  Joaquin
                  5123789
  Guadalupe
               8845748
Database:
current record:6
datatypes:{}
triples:[]
valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
______
### Original Python2 File:
### insert.py
#####################################
for i in range(10):
 print i,
print
sql:
 CREATE TABLE Customers (
   name VARCHAR(100),
   last VARCHAR(15),
   phone int
```

```
INSERT INTO Customers VALUES ('Phil', 'Cannata', 7735647)
   INSERT INTO Customers VALUES ('Matthew', 'Clarkson', 9875643)
   INSERT INTO Customers VALUES ('Joaquin', 'Casares', 3451878)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 9345879)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 5123789)
   INSERT INTO Customers VALUES ('Joaquin', 'Guadalupe', 8845748)
 :sql
 sql: DATABASEPRINT :sql
 sql:PRINT SELECT * FROM Customers:sql
 list = sql:TRIPLES:sql
 print 'Here are the triples!'
 for i in list:
   print i,
 print
 ### Converted Python File:
 for i in range(10):
   print i,
 print
 print "Database:"
 print "Customers:[1, 2, 3, 4, 5, 6]"
 print "Customers_fields:['name', 'last', 'phone']"
 print "current record:6"
 print "datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR':
 print "triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name',
Matthew'), (2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last',
Casares'), (3, 'phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone',
9345879), (5, 'name', 'Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name',
Joaquin'), (6, 'last', 'Guadalupe'), (6, 'phone', 8845748)]"
 print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
 print
 print 'Customers:'
 print ' name
                            last
                                              phone
 print ' |-----
 print ' Phil
                            Cannata
                                              7735647
 print '| Matthew
                           Clarkson
                                              9875643
```

```
print '
           Joaquin
                            Casares
                                             3451878
 print '
           Joaquin
                            Joaquin
                                             9345879
 print '
           Joaquin
                            Joaquin
                                             5123789
 print '
           Joaquin
                            Guadalupe
                                             8845748
 print
 list = (1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name', 'Matthew'), (2,
'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last', 'Casares'), (3, 'phone'
 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone', 9345879), (5, 'name', 'Joaquin'
 , (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name', 'Joaquin'), (6, 'last', 'Guadalupe'), (6,
phone', 8845748)
 print 'Here are the triples!'
  or i in list:
   print i,
 print
 ### Console Output:
 0 1 2 3 4 5 6 7 8 9
 Database:
 Customers: [1, 2, 3, 4, 5, 6]
 Customers_fields:['name', 'last', 'phone']
 current record:6
 datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}}
 triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name', 'Matthew'), (
2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last', 'Casares'), (3,
phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone', 9345879), (5, 'name',
Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name', 'Joaquin'), (6, 'last',
Guadalupe'), (6, 'phone', 8845748)]
 valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 Customers:
    name
                     last
                                      phone
    Phil
                     Cannata
                                      7735647
                     Clarkson
                                      9875643
    Matthew
    Joaquin
                     Casares
                                      3451878
    Joaquin
                     Joaquin
                                      9345879
    Joaquin
                     Joaquin
                                      5123789
                     Guadalupe
    Joaquin
                                      8845748
 Here are the triples!
 (1, 'name', 'Phil') (1, 'last', 'Cannata') (1, 'phone', 7735647) (2, 'name', 'Matthew') (2, 'last',
Clarkson') (2, 'phone', 9875643) (3, 'name', 'Joaquin') (3, 'last', 'Casares') (3, 'phone', 3451878) (4
 'name', 'Joaquin') (4, 'last', 'Joaquin') (4, 'phone', 9345879) (5, 'name', 'Joaquin') (5, 'last',
Joaquin') (5, 'phone', 5123789) (6, 'name', 'Joaquin') (6, 'last', 'Guadalupe') (6, 'phone', 8845748)
```

```
### Original Python2 File:
 ### joins.py
 for i in range(10):
   print i,
 print
 sql:
   CREATE TABLE Customers (
     name VARCHAR(100),
     last VARCHAR(15),
     phone int
   INSERT INTO Customers VALUES ('Phil', 'Cannata', 7735647)
   INSERT INTO Customers VALUES ('Matthew', 'Clarkson', 9875643)
   INSERT INTO Customers VALUES ('Joaquin', 'Casares', 3451878)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 9345879)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 5123789)
   INSERT INTO Customers VALUES ('Joaquin', 'Guadalupe', 8845748)
 :sql
 sql: DATABASEPRINT :sql
 sql:PRINT SELECT * FROM Customers:sql
 ______
 ### Converted Python File:
 for i in range(10):
   print i,
 print
 print "Database:"
 print "Customers:[1, 2, 3, 4, 5, 6]"
 print "Customers fields:['name', 'last', 'phone']"
 print "current record:6"
 print "datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR':
100'}}"
 print "triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name',
Matthew'), (2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last',
Casares'), (3, 'phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone',
9345879), (5, 'name', 'Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name',
Joaquin'), (6, 'last', 'Guadalupe'), (6, 'phone', 8845748)]"
 print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
 print
```

```
print 'Customers:'
 print ' |-----
 print '
                                            phone
           name
                            last
 print '
 print '
           Phil
                            Cannata
                            Clarkson
 print '
           Matthew
                                            9875643
 print '
           Joaquin
                            Casares
                                            3451878
 print '
           Joaquin
                            Joaquin
                                            9345879
 print '
           Joaquin
                            Joaquin
                                            5123789
 print '
           Joaquin
                            Guadalupe
                                            8845748
 print '
 ______
 ### Console Output:
 0 1 2 3 4 5 6 7 8 9
 Database:
 Customers: [1, 2, 3, 4, 5, 6]
 Customers_fields:['name', 'last', 'phone']
 current_record:6
 datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}}
 triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name', 'Matthew'), (
2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last', 'Casares'), (3,
phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone', 9345879), (5, 'name',
Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name', 'Joaquin'), (6, 'last',
Guadalupe'), (6, 'phone', 8845748)]
 valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 Customers:
                     last
                                     phone
    Phil
                     Cannata
                                     7735647
    Matthew
                     Clarkson
                                     9875643
    Joaquin
                     Casares
                                     3451878
    Joaquin
                     Joaquin
                                     9345879
    Joaquin
                     Joaquin
                                     5123789
                                     8845748
    Joaquin
                     Guadalupe
 #######################
 ### Original Python2 File:
 ### select.py
 for i in range(10):
   print i,
```

```
print
sql:
 CREATE TABLE Customers (
    name VARCHAR(100)
    last VARCHAR(15),
    phone int
  INSERT INTO Customers VALUES ('Phil', 'Cannata', 7735647)
  INSERT INTO Customers VALUES ('Matthew', 'Clarkson', 9875643)
 INSERT INTO Customers VALUES ('Joaquin', 'Casares', 3451878)
  INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 9345879)
 INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 5123789)
 INSERT INTO Customers VALUES ('Joaquin', 'Guadalupe', 8845748)
:sql
print 'What follows gets sent to the actual python code.'
print 'Not the output window.'
sql:
  SELECT DISTINCT name, last FROM Customers
:sql
sql:
  SELECT DISTINCT name FROM Customers
:sql
sql:
 SELECT name, last, phone FROM Customers
:sql
sql:
 SELECT name, last, phone FROM Customers WHERE phone > 6001234
:sql
sql:
 SELECT name, last, phone FROM Customers WHERE phone ↔ 7735647
:sql
print
sql: PRINT SELECT * FROM Customers
     ORDER BY name asc
:sql
print
print
sql: PRINT SELECT * FROM Customers
     ORDER BY last desc
:sal
print
print 'All rows: '
for a in sql:SELECT * FROM Customers:sql :
 print a,
print '\n'
```

```
print 'All phone numbers: '
for a in sql:SELECT phone FROM Customers:sql :
  print a,
print '\n'
print 7735647 in sql:CONTENTS SELECT phone FROM Customers:sql
print 7735647 in sql:CONTENTS SELECT * FROM Customers:sql
print
for i in sql:CONTENTS SELECT * FROM Customers:sql:
  print i,
print '\n'
sql: DATABASEPRINT :sql
sql:PRINT SELECT * FROM Customers:sql
### Converted Python File:
for i in range(10):
  print i,
print
print 'What follows gets sent to the actual python code.'
print 'Not the output window.'
[['Phil', 'Cannata'], ['Matthew', 'Clarkson'], ['Joaquin', 'Casares'], ['Joaquin', 'Joaquin'], [
Joaquin', 'Guadalupe']]
[['Phil'], ['Matthew'], ['Joaquin']]
[['Phil', 'Cannata', 7735647], ['Matthew', 'Clarkson', 9875643], ['Joaquin', 'Casares', 3451878], [
Joaquin', 'Joaquin', 9345879], ['Joaquin', 'Joaquin', 5123789], ['Joaquin', 'Guadalupe', 8845748]]
[['Phil', 'Cannata', 7735647], ['Matthew', 'Clarkson', 9875643], ['Joaquin', 'Joaquin', 9345879], [
Joaquin', 'Guadalupe', 8845748]]
[['Matthew', 'Clarkson', 9875643], ['Joaquin', 'Casares', 3451878], ['Joaquin', 'Joaquin', 9345879], [
Joaquin', 'Joaquin', 5123789], ['Joaquin', 'Guadalupe', 8845748]]
print
print 'Customers:'
print '|-----
print ' |-----
print '| Joaquin
                     Casares
                                     3451878
print ' Joaquin
                        Joaquin
                                      9345879
                                      5123789
print '| Joaquin
                      Joaquin
print ' Joaquin
                                      8845748
                      Guadalupe
print ' | Matthew
                      Clarkson
                                        9875643
print ' Phil
                      Cannata
                                      7735647
```

```
print ' --
 print
 print
 print 'Customers:'
 print '|----
 print '
           name
                            last
                                             phone
 print '
                            Joaquin
           Joaquin
                                             5123789
 print '
           Joaquin
                            Joaquin
                                             9345879
 print '
           Joaquin
                            Guadalupe
                                             8845748
           Matthew
 print '
                            Clarkson
                                             9875643
 print '
          Joaquin
                            Casares
                                             3451878
 print '
           Phil
                                             7735647
                            Cannata
 print ' --
 print
 print 'All rows: '
 for a in [['Phil', 'Cannata', 7735647], ['Matthew', 'Clarkson', 9875643], ['Joaquin', 'Casares',
,'Joaquin', 'Joaquin', 'Joaquin', 'Joaquin', 'Joaquin', 'S123789], ['Joaquin', 'Guadalupe',
8845748]]:
   print a,
 print '\n'
 print 'All phone numbers: '
 for a in [[7735647], [9875643], [3451878], [9345879], [5123789], [8845748]]:
   print a,
 print '\n'
 print 7735647 in [7735647, 9875643, 3451878, 9345879, 5123789, 8845748]
 print 7735647 in ['Phil', 'Cannata', 7735647, 'Matthew', 'Clarkson', 9875643, 'Joaquin', 'Casares',
[845748] ( 'Guadalupe', 19345879, 'Joaquin', 'Joaquin', 5123789, 'Joaquin', 'Guadalupe', 8845748]
 print
 for i in ['Phil', 'Cannata', 7735647, 'Matthew', 'Clarkson', 9875643, 'Joaquin', 'Casares', 3451878,
Joaquin', 'Joaquin', 9345879, 'Joaquin', 'Joaquin', 5123789, 'Joaquin', 'Guadalupe', 8845748]:
   print i,
 print '\n'
 print "Database:"
 print "Customers:[1, 2, 3, 4, 5, 6]"
 print "Customers_fields:['name', 'last', 'phone']"
 print "current record:6"
 print "datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR':
100'}}}"
 print "triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name',
Matthew'), (2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last',
Casares'), (3, 'phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone',
9345879), (5, 'name', 'Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name',
Joaquin'), (6, 'last', 'Guadalupe'), (6, 'phone', 8845748)]"
```

```
print "valid datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
print
print 'Customers:'
print '|-----
print '
                       last
                                          phone
print '
print '
         Phil
                          Cannata
                                          7735647
print '
         Matthew
                          Clarkson
                                          9875643
print '
         Joaquin
                          Casares
                                          3451878
print '
         Joaquin
                          Joaquin
                                          9345879
print '
         Joaquin
                          Joaquin
                                          5123789
print '
                                        8845748
         Joaquin
                          Guadalupe
print '
### Console Output:
0 1 2 3 4 5 6 7 8 9
What follows gets sent to the actual python code.
Not the output window.
Customers:
                  last
                                    phone
  Joaquin
                   Casares
                                    3451878
  Joaquin
                   Joaquin
                                    9345879
  Joaquin
                  Joaquin
                                   5123789
  Joaquin
                   Guadalupe
                                    8845748
  Matthew
                   Clarkson
                                    9875643
  Phil
                   Cannata
                                   7735647
Customers:
                last
  name
                                    phone
  Joaquin
                   Joaquin
                                    5123789
  Joaquin
                  Joaquin
                                   9345879
  Joaquin
                   Guadalupe
                                    8845748
  Matthew
                  Clarkson
                                    9875643
  Joaquin
                  Casares
                                    3451878
  Phil
                   Cannata
                                    7735647
All rows:
['Phil', 'Cannata', 7735647] ['Matthew', 'Clarkson', 9875643] ['Joaquin', 'Casares', 3451878] [
```

```
Joaquin', 'Joaquin', 9345879] ['Joaquin', 'Joaquin', 5123789] ['Joaquin', 'Guadalupe', 8845748]
 All phone numbers:
 [7735647] [9875643] [3451878] [9345879] [5123789] [8845748]
 True
 True
 Phil Cannata 7735647 Matthew Clarkson 9875643 Joaquin Casares 3451878 Joaquin Joaquin 9345879 Joaquin
Joaquin 5123789 Joaquin Guadalupe 8845748
 Database:
 Customers: [1, 2, 3, 4, 5, 6]
 Customers_fields:['name', 'last', 'phone']
 current record:6
 datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}}
 triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name', 'Matthew'), (
!, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last', 'Casares'), (3,
phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone', 9345879), (5, 'name',
Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name', 'Joaquin'), (6, 'last',
Guadalupe'), (6, 'phone', 8845748)]
 valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 Customers:
                     last
                                     phone
    name
    Phil
                     Cannata
                                      7735647
    Matthew
                     Clarkson
                                     9875643
    Joaquin
                     Casares
                                     3451878
    Joaquin
                     Joaquin
                                     9345879
    Joaquin
                     Joaquin
                                     5123789
    Joaquin
                     Guadalupe
                                     8845748
    ______
 ######################
 ### Original Python2 File:
 ### truncate.py
 for i in range(10):
   print i,
 print
 sql:
   CREATE TABLE Customers (
     name VARCHAR(100)
     last VARCHAR(15),
     phone int
```

```
INSERT INTO Customers VALUES ('Phil', 'Cannata', 7735647)
   INSERT INTO Customers VALUES ('Matthew', 'Clarkson', 9875643)
   INSERT INTO Customers VALUES ('Joaquin', 'Casares', 3451878)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 9345879)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 5123789)
   INSERT INTO Customers VALUES ('Joaquin', 'Guadalupe', 8845748)
   DATABASEPRINT
   TRUNCATE TABLE Firsts
   TRUNCATE TABLE Customers
   DATABASEPRINT
 :sql
 ______
 ### Converted Python File:
 for i in range(10):
   print i,
 print
 print "Database:"
 print "Customers:[1, 2, 3, 4, 5, 6]"
 print "Customers_fields:['name', 'last', 'phone']"
 print "current record:6"
 print "datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR':
100'}}"
 print "triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name',
Matthew'), (2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last',
Casares'), (3, 'phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone',
9345879), (5, 'name', 'Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name',
Joaquin'), (6, 'last', 'Guadalupe'), (6, 'phone', 8845748)]"
 print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
 print "Database:"
 print "Customers:[]"
 print "Customers fields:[]"
 print "current_record:6"
 print "datatypes:{}"
 print "triples:[]"
 print "valid datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
 print
 _______
 ### Console Output:
 Table: Firsts does not exist. Database unchanged.
 0 1 2 3 4 5 6 7 8 9
 Database:
 Customers: [1, 2, 3, 4, 5, 6]
 Customers fields:['name', 'last', 'phone']
```

```
current record:6
 datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}}
triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name', 'Matthew'), (
2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last', 'Casares'), (3,
phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone', 9345879), (5, 'name',
Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name', 'Joaquin'), (6, 'last',
Guadalupe'), (6, 'phone', 8845748)]
valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 Database:
 Customers:[]
 Customers fields:[]
 current_record:6
 datatypes:{}
 triples:[]
 valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 #####################
 ### Original Python2 File:
 ### union.py
 for i in range(10):
  print i,
 print
 sql:
  CREATE TABLE Customers (
     name VARCHAR(100),
    last VARCHAR(15),
     phone int
   INSERT INTO Customers VALUES ('Phil', 'Cannata', 7735647)
   INSERT INTO Customers VALUES ('Matthew', 'Clarkson', 9875643)
  INSERT INTO Customers VALUES ('Joaquin', 'Casares', 3451878)
  INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 9345879)
   INSERT INTO Customers VALUES ('Joaquin', 'Joaquin', 5123789)
  INSERT INTO Customers VALUES ('Joaquin', 'Guadalupe', 8845748)
 :sql
 sql: DATABASEPRINT :sql
 sql:PRINT SELECT * FROM Customers:sql
 ______
 ### Converted Python File:
```

Matthew Clarkson

```
for i in range(10):
   print i,
 print
 print "Database:"
 print "Customers:[1, 2, 3, 4, 5, 6]"
 print "Customers_fields:['name', 'last', 'phone']"
 print "current record:6"
 print "datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR':
100'}}}"
 print "triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name',
Matthew'), (2, 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last',
Casares'), (3, 'phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone',
9345879), (5, 'name', 'Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name',
Joaquin'), (6, 'last', 'Guadalupe'), (6, 'phone', 8845748)]"
 print "valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']"
 print
 print 'Customers:'
 print ' ----
 print '
         name
                                            phone
                            last
 print '|---
 print '
         Phil
                            Cannata
                                            7735647
 print '| Matthew
                           Clarkson
                                            9875643
 print '
           Joaquin
                            Casares
                                            3451878
 print '
          Joaquin
                           Joaquin
                                            9345879
 print '| Joaquin
                                            5123789
                            Joaquin
 print '
           Joaquin
                           Guadalupe
                                            8845748
 print '|--
 ______
 ### Console Output:
 0 1 2 3 4 5 6 7 8 9
 Database:
 Customers: [1, 2, 3, 4, 5, 6]
 Customers fields:['name', 'last', 'phone']
 current record:6
 datatypes:{'Customers': {'phone': {'INT': -1}, 'last': {'VARCHAR': '15'}, 'name': {'VARCHAR': '100'}}}
 triples:[(1, 'name', 'Phil'), (1, 'last', 'Cannata'), (1, 'phone', 7735647), (2, 'name', 'Matthew'), (
 , 'last', 'Clarkson'), (2, 'phone', 9875643), (3, 'name', 'Joaquin'), (3, 'last', 'Casares'), (3,
phone', 3451878), (4, 'name', 'Joaquin'), (4, 'last', 'Joaquin'), (4, 'phone', 9345879), (5, 'name',
Joaquin'), (5, 'last', 'Joaquin'), (5, 'phone', 5123789), (6, 'name', 'Joaquin'), (6, 'last',
Guadalupe'), (6, 'phone', 8845748)]
 valid_datatypes:['VARCHAR', 'INT', 'CHAR', 'TEXT', 'BIT', 'BIGINT', 'REAL']
 Customers:
```

```
name
                   last
                                   phone
  Phil
                   Cannata
                                   7735647
                   Clarkson
  Matthew
                                   9875643
                   Casares
  Joaquin
                                   3451878
  Joaquin
                   Joaquin
                                   9345879
  Joaquin
                   Joaquin
                                   5123789
                                   8845748
  Joaquin
                   Guadalupe
### Original Python2 File:
### update.py
for i in range(10):
 print i,
print
sql:
 CREATE TABLE new_Customers (
   name VARCHAR(100)
   last VARCHAR(15),
   phone int,
   birthday int
 INSERT INTO new Customers VALUES ('Lake', 'Travis', 911, 1)
 INSERT INTO new_Customers VALUES ('Absente', 'Mee', 302740, 8)
 INSERT INTO new_Customers VALUES ('Burbple', 'Durple', 8837232, 7)
 INSERT INTO new_Customers VALUES ('Hes', 'ABob', 8675309, 2)
 INSERT INTO new_Customers VALUES ('See', 'Mee', 302740, 1)
 INSERT INTO new_Customers VALUES ('Jose', 'Nosey', 928223, 2)
 INSERT INTO new_Customers VALUES ('Miggh', 'Tyfine', 124967, 2)
 UPDATE new Customers SET last='Bosey', name='Bob' WHERE last='Jose' AND name='Nosey'
 PRINT SELECT * FROM new Customers
 UPDATE new_Customers SET last='Bosey', name='Bob' WHERE last='Jose'
 PRINT SELECT * FROM new_Customers
 UPDATE new_Customers SET last='Bosey', name='Bob', phone=9343
 PRINT SELECT * FROM new_Customers
:sal
______
### Converted Python File:
#!/usr/bin/env python2.py
for i in range(10):
 print i,
print
```

```
print 'new_Customers:'
print
                            last
                                              phone
                                                                 birthday
print
print
          Lake
                            Travis
                                              911
print '
          Absente
                            Mee
                                               302740
print '
          Burbple
                            Durple
                                              8837232
print
          Hes
                            ABob
                                              8675309
print '
          See
                            Mee
                                               302740
                                                                 1
print '
          Jose
                                              928223
                            Nosey
print
                            Tyfine
          Miggh
                                               124967
print '
print 'new_Customers:'
print
print
                                              phone
                                                                 birthday
                            last
print
print
          Lake
                            Travis
                                              911
print '
          Absente
                            Mee
                                               302740
                                                                 8
                                                                 7
          Burbple
                            Durple
                                              8837232
print
          Hes
                            ABob
                                              8675309
                                                                 2
print '
          See
                            Mee
                                               302740
                                                                 1
print '
          Jose
                                              928223
                            Nosey
print
          Miggh
                            Tyfine
                                               124967
print
print 'new Customers:'
                                                                 birthday
                            last
                                              phone
print
print
          Bob
                            Bosey
                                              9343
                                                                 1
print
                                                                 8
          Bob
                            Bosey
                                              9343
print
          Bob
                                              9343
                            Bosey
print
          Bob
                            Bosey
                                              9343
                                                                 2
print '
          Bob
                            Bosey
                                              9343
print '
                                                                 2
          Bob
                            Bosey
                                              9343
print '
          Bob
                                              9343
                            Bosey
print
```

Console Output:

0 1 2 3 4 5 6 7 8 9

new_Customers:

 name	last	phone	birthday	ı
Lake Absente Burbple Hes See	Travis Mee Durple ABob Mee	911 302740 8837232 8675309 302740	1 8 7 2 1	

2

9343

9343

Bosey

Bosey

Bob

Bob