```
______
######################
### Original Python2 File:
### alter.py
######################
for i in range(10):
  print i,
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 "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
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
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
```

```
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 ' Lake
                          Travis
                                          911
print '| Absente
                                          302740
                                                           8
                          Mee
print '| Burbple
                          Durple
                                          8837232
print ' Hes
                          ABob
                                          8675309
```

print '	See	Mee	302740	1	11
print '	Jose	Nosey	928223	2	1.
print '	Miggh	Tyfine	124967	2	100
print '		, ry r ± nc	124307		
	new_Customers:'				
print '	 				
print '	l name l	last	phone	birthday	11
print '			p		Ġ.
print '	Lake	Travis	911	1	11
print '		Mee	302740	8	j.
print '		Durple	8837232	7	j.
print '	Hes	ABob	8675309	2	j.
print '		Mee	302740	1	j.
print '	Jose	Nosey	928223	2	j.
print '	Miggh	Tyfine	124967	2	j.
print '		.,			Ġ.
	new_Customers:'				
print '					'
print '	name	last	phone	birthday	11
print '					'.
print '	Lake	Travis	911	1	11
print '		Mee	302740	8	j.
print '	Burbple	Durple	8837232	7	j.
print '		ABob	8675309	2	j.
print '		Mee	302740	1	j.
print '	Jose	Nosey	928223	2	je i
print '	Miggh	Tyfine	124967	2	je i
print '					Дeг.
	new_Customers:'				
print '					-11
print '	name	last	phone	birthday	11
print '					. i i
print '	Lake	Travis	911	1	11
print '	Absente	Mee	302740	8	j.
print '		ABob	8675309	2	11
print '	See	Mee	302740	1	11
print '	Jose	Nosey	928223	2	11
print '	Miggh	Tyfine	124967	2	1'
print '					'
print '	new_Customers:'				
print '					'
print '	name	last	phone	birthday	11
print '					'
print '	Lake	Travis	911	1	1'
print '	Absente	Mee	302740	8	11
print '	See	Mee	302740	1	1'
print '	Jose	Nosey	928223	2	1'
print '		Tyfine	124967	2	1'
print '					'
print '	new_Customers:'				
print '					'

Joaquin Casares		Python2: The SQI	L (Documentation)	
<pre>print ' name</pre>	last	phone	birthday	' '
print '				
<pre>print ' Lake</pre>	Travis	911	1	11
<pre>print ' Absente</pre>	Mee	302740	8	11
<pre>print ' See</pre>	Mee	302740	1	11
<pre>print ' Jose</pre>	Nosey	928223	2	11
<pre>print ' Miggh</pre>	Tyfine	124967	2	1.
print '				
<pre>print 'new_Custom</pre>	ers:'			
print '				
<pre>print ' name</pre>	last	phone	birthday	' '
print '				
<pre>print ' Lake</pre>	Travis	911	1	
<pre>print ' Absente</pre>		302740	8	'
<pre>print ' See</pre>	Mee	302740	1	
<pre>print ' Jose</pre>	Nosey	928223	2	
print ' Miggh	Tyfine	124967	2	1.
print '				'
<pre>print 'new_Custom</pre>	ers:'			
print '				
<pre>print ' name</pre>	last	phone	birthday	' '
print '				
print ' Lake	Travis	911	1	1.
<pre>print ' Jose</pre>	Nosey	928223	2	1.
print ' Miggh	Tyfine	124967	2	11
print '				
### Cara-1- Outside	=============	=========	====	
### Console Output:				
012245670	0			
0 1 2 3 4 5 6 7 8 new_Customers:				
lew_cuscomers.				
name	last	phone	birthday	
	1430	phone-	Dir chaay	
Lake	Travis	911	1	
Absente	Mee	302740	8	
Burbple	Durple	8837232	7	
Hes	ABob	8675309	2	
See	Mee	302740	1 1	
Jose	Nosey	928223	2	
Missele	T C'	124067	1 2	

new_Customers:

Miggh

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

124967

Tyfine

quin Casares		Python2: The	SQL (Documentation)	Matthew Cla
Jose	Nosey	928223	2	
Miggh		124967	2	
new_Customers:				
name	last	phone		
Lake			1	
Absente	Travis	•		
	Mee	302740	8	
Burbple	Durple	8837232	7	
Hes	ABob	8675309	2	
See -	Mee	302740	1	
Jose		928223	2	
Miggh	Tyfine	124967	2	
new_Customers:				
name	last	phone phone		
Lake	Travis	911	1	
Absente	Mee	302740	8	
Hes	ABob	8675309	2	
See	Mee	302740	1	
Jose	•	928223	2	
Miggh		124967	2	
new_Customers: name	last	phone	birthday	
		L 011		
Lake	Travis	911	1	
Absente	Mee	302740	8	
See	Mee	302740	1 1	
Jose	Nosey	928223	2	
Miggh	Tyfine	124967	2	
new_Customers:				
name	last	phone	birthday	
Lake	Travis	911	1	
Absente	Mee	302740	8	
See	Mee	302740	1	
Jose	Nosey	•	2	
Miggh	Tyfine	124967	2	
new_Customers:				
ļ -				
name	lact	phone	birthday	
Hallie	last	phone	DII Cilday	
	 Travis	911	1	

```
See
                   Mee
                                    302740
  Jose
                   Nosey
                                   928223
                   Tyfine
  Miggh
                                   124967
new Customers:
                   last
                                   phone
                                                    birthday
  Lake
                   Travis
                                   911
  Jose
                   Nosev
                                   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
          name
                                             phone
                            last
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 '
print 'Customers:'
print
print
          last
                            phone
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:
   name
                    last
                                      phone
   Phil
                    Cannata
                                      7735647
                    Clarkson
  Matthew
                                      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
______
### 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 'Customers:'
 print '|----
 print '
           name
                             last
                                              phone
 print ' ----
  print '
           Phil
                             Cannata
                                              7735647
 print '
           Matthew
                             Clarkson
                                              9875643
 print '
           Joaquin
                            Casares
                                              3451878
 print '
                                              9345879
           Joaquin
                             Joaquin
 print '
           Joaquin
                             Joaquin
                                              5123789
 print '
                                              8845748
           Joaquin
                            Guadalupe
 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
    name
                                       phone
    Phil
                      Cannata
                                       7735647
    Matthew
                     Clarkson
                                       9875643
    Joaquin
                     Casares
                                       3451878
    Joaquin
                      Joaquin
                                       9345879
                                       5123789
    Joaquin
                     Joaquin
```

```
Joaquin
                     Guadalupe
                                      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
                                            9875643
 print '
           Matthew
 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
                     Guadalupe
                                     8845748
    Joaquin
 #######################
 ### 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
:sql
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 ' name
                     last phone
print ' Joaquin
                      Casares
                                      3451878
print ' Joaquin
                      Joaquin
                                      9345879
print ' Joaquin
                      Joaquin
                                     5123789
print '| Joaquin
                      Guadalupe
                                     8845748
print ' | Matthew
                      Clarkson
                                      9875643
print ' Phil
                      Cannata
                                     7735647
print '|-----
print
```

```
print
 print 'Customers:'
 print ' |-----
 print '
                            last
                                              phone
 print ' ----
 print '
                                             5123789
           Joaquin
                            Joaquin
 print '
           Joaquin
                            Joaquin
                                             9345879
           Joaquin
 print '
                            Guadalupe
                                             8845748
 print '
           Matthew
                            Clarkson
                                             9875643
 print '| Joaquin
                            Casares
                                             3451878
 print ' Phil
                            Cannata
                                             7735647
 print '|---
 print
 print 'All rows: '
  for a in [['Phil', 'Cannata', 7735647], ['Matthew', 'Clarkson', 9875643], ['Joaquin', 'Casares',
,'Joaquin', 'Joaquin', 'Joaquin', 'Joaquin', 'Joaquin', '5123789], ['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',
[8845748], 'Joaquin', 'Joaquin', 9345879, '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':
 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
                            last
                                             phone
print '
          Phil
print '
                            Cannata
                                             7735647
print '
          Matthew
                            Clarkson
                                             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
What follows gets sent to the actual python code.
Not the output window.
Customers:
                     last
                                      phone
   name
   Joaquin
                     Casares
                                      3451878
   Joaquin
                     Joaquin
                                      9345879
   Joaquin
                     Joaquin
                                      5123789
   Joaquin
                     Guadalupe
                                      8845748
   Matthew
                     Clarkson
                                      9875643
   Phil
                     Cannata
                                      7735647
Customers:
   name
                    last
                                      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'), (
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
                                       7735647
                      Cannata
    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 "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 "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'), (
, '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:
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 ' -----
           name
                            last
                                             phone
 print '|---
 print '
           Phil
                                             7735647
                            Cannata
 print '
          Matthew
                            Clarkson
                                             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'), (
 '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
    name
                                      phone
    Phil
                     Cannata
                                      7735647
    Matthew
                     Clarkson
                                      9875643
    Joaquin
                     Casares
                                      3451878
    Joaquin
                     Joaquin
                                      9345879
    Joaquin
                     Joaquin
                                      5123789
    Joaquin
                     Guadalupe
                                      8845748
 ### 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
:sql
### Converted Python File:
for i in range(10):
 print i,
print
print 'new_Customers:'
print ' |-----
                                                           birthday
print ' name
                          last
                                           phone
print ' |-----
print '
         Lake
                          Travis
                                           911
                                           302740
                                                            8
print '
         Absente
                          Mee
print '
                                                            7
         Burbple
                          Durple
                                           8837232
                                                            2
print '
         Hes
                          ABob
                                           8675309
print '
         See
                          Mee
                                           302740
                                                            1
print '
                                                            2
         Jose
                          Nosey
                                           928223
print '
                          Tyfine
                                           124967
         Miggh
print '|-----
print 'new Customers:'
print ' name
                       last
                                        phone
                                                         birthday
```

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

Console Output:

0 1 2 3 4 5 6 7 8 9

new_Customers:

name	last	phone	I	birthday	I
Lake	Travis	911	ī	1	I
Absente	Mee	302740		8	1
Burbple	Durple	8837232		7	
Hes	ABob	8675309		2	
See	Mee	302740		1	
Jose	Nosey	928223		2	
Miggh	Tyfine	124967		2	-

new_Customers:

name	last	phone	I	birthday	I
Lake	Travis	911	I	1	I
Absente	Mee	302740		8	
Burbple	Durple	8837232		7	
Hes	ABob	8675309		2	
See	Mee	302740		1	
Jose	Nosey	928223		2	
Miggh	Tyfine	124967		2	

new_Customers:

1 yardina 110 Sun (Bookinshiadon)				
name	last	phone	birthday	
Bob	Bosey	9343	1	
Bob	Bosey	9343	8	
Bob	Bosey	9343	7	
Bob	Bosey	9343	2	
Bob	Bosey	9343	1	
Bob	Bosey	9343	2	
Bob	Bosey	9343	2	