

6.3 Itse1359-1930-Dbm and Shelve Databases

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Preface

This module is one in a collection of modules on Python designed for teaching *ITSE 1359 Introduction to Scripting Languages: Python* at Austin Community College in Austin, TX.

This module contains review questions and answers keyed to material on the following web sites:

- [The Python Standard Library - 12.5. dbm - Interfaces to Unix "databases"](https://docs.python.org/3/library/dbm.html)
- [The Python Standard Library - 12.3. shelve - Python object persistence](#)

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(<https://docs.python.org/3/library/shelve.html>)

- The Python Standard Library - 12.1. pickle - Python object serialization
(<https://docs.python.org/3/library/pickle.html>)
- The Python Standard Library - 4.10. Mapping Types - dict
(<https://docs.python.org/3/library/stdtypes.html#mapping-types-dict>)

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"Question 8 True or False? When using the **dbm.dumb** module, attempting to store a key or value that"

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Once you study that module, you should be able to answer the review questions in this module.

The questions and the answers in this module are connected by hyperlinks to make it easy for you to navigate from the question to the answer and back again.

(Note to blind and visually impaired students: with the exception of two bitmap images that are used solely as spacers to separate the question section from the answer section, all of the material in this module is presented in plain text format and should be accessible using an audio screen reader or a braille display. Note however that the required indentation may not be properly represented by an audio screen reader.)

Questions

Question 1

True or False? The webpage at [The Python Standard Library - 12.1. pickle - Python object serialization \(https://docs.python.org/3/library/pickle.html\)](https://docs.python.org/3/library/pickle.html) contains the following warning:

Warning: The pickle module is not intended to be secure against erroneous or maliciously constructed data. Never unpickle data received from an untrusted or unauthenticated source.

Go to [answer 1](#)

Question 2

True or False? The webpage at [The Python Standard Library - 12.3. shelve - Python object persistence](#)

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(<https://docs.python.org/3/library/shelve.html>) contains the following warning:

Warning: Because the shelve module is backed by pickle, it is insecure to load a shelf from an untrusted source. Like with pickle, loading a shelf can execute arbitrary code.

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Question 3

True or False? The webpage at [The Python Standard Library - 12.5. dbm - Interfaces to Unix "databases"](https://docs.python.org/3/library/dbm.html) (<https://docs.python.org/3/library/dbm.html>) contains the following warning:

Warning: The dbm module is not intended to be secure against erroneous or maliciously constructed data. Never use dbm data received from an untrusted or unauthenticated source.

Go to [answer 3](#)

Question 4

True or False? **dbm** is a generic interface to variants of the DBM databases - **dbm.gnu** or **dbm.ndbm** . If neither of these modules is installed, the program will raise a "Module not found" error.

Go to [answer 4](#)

Question 5

True or False? The function named **dbm.whichdb(filename)** can be called to determine which database module should be used to open a given database file.

Go to [answer 5](#)

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Question 6

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True or False? The function named **dbm.getDatabase** can be called to open an existing **dbm** database file or to create a new **dbm** database file.

[Go to answer 6](#)

Question 7

True or False? The object returned by **dbm.open** supports the same basic functionality as tuples. Keys and their corresponding values can be stored, retrieved, and deleted. The **in** operator and the **keys** method are available, as well as **get** and **setdefault**.

[Go to answer 7](#)

Question 8

True or False? When using the **dbm.dumb** module, attempting to store a key or value that is not a string will raise an exception.

[Go to answer 8](#)

Question 9

True or False? The following statement appears on the webpage at [The Python Standard Library - 12.5. dbm - Interfaces to Unix "databases"](https://docs.python.org/3/library/dbm.html) (<https://docs.python.org/3/library/dbm.html>).

Note: The **dbm.dumb** module is intended as a last resort fallback for the **dbm** module when a more robust module is not available. The **dbm.dumb** module is not written for speed and is not nearly as heavily used as the other database modules.

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Question 10

True or False? The code in the top panel of Figure 1 can be used to create or open a **dumbdbm** database and return a **dumbdbm** object.

Go to [answer 10](#)

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Question 11

True or False? The code in the top panel of [Figure 1](#) produces the output shown in the bottom panel of [Figure 1](#).

Figure 1 . Question 11.

```
import dbm.dumb

dumbDb = dbm.dumb.open('database', 'c')

dumbDb[b'aNumber'] = 1234
print(dumbDb.get('aNumber'))

dumbDb.close()

=====
1234
```

Go to [answer 11](#)

Question 12

True or False? The code in the top panel of Figure 3 produces the output shown in the bottom panel of

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Figure 3.

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Figure 3 . Question 12.

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import dbm.dumb

dumbDb = dbm.dumb.open('database', 'c')

```
dumbDb[b'aNumber'] = b'1234'
print(dumbDb.get('aNumber'))
```

dumbDb.close()

```
=====
b'1234'
```

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[Go to answer 12](#)

Question 13

True or False? The code in the top panel of [Figure 4](#) produces the output shown in the bottom panel of [Figure 4](#).

Figure 4 . Question 13.

import dbm.dumb

dumbDb = dbm.dumb.open('database', 'c')

empName = b'Joe'

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```
dumbDb[b'name'] = empName
dumbDb[b"cubicle"] = b"639"
dumbDb[b"phone"] = b"617.665.2154"
```

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```
(/contents/lrNEBZVi@32.48:CIU4fZwQ/itse1359-
if(empName in dumbDb):
    print('name: ', dumbDb.get(b'name'))
    print('cubicle: ', dumbDb.get(b'cubicle'))
    print('phone: ', dumbDb.get(b'phone'))
else:
    print("Not in dumbDb")
```

```
dumbDb.close()
=====
name: b'Joe'
cubicle: b'639'
phone: b'617.665.2154'
```

Go to [answer 13](#)

Question 14

True or False? The code in the top panel of [Figure 6](#) produces the output shown in the bottom panel of [Figure 6](#).

Figure 6 . Question 14.

```
import dbm.dumb

dumbDb = dbm.dumb.open('database', 'c')

empName = b'Joe'
```

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empName = empName

dumbDb[b"cubicle"] = b"639"

dumbDb[b"phone"] = b"617.665.2154"

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if(b'name' in dumbDb):

print('name: ', dumbDb.get(b' name'))

print('cubicle: ', dumbDb.get(b'cubicle'))

print('phone: ', dumbDb.get(b'phone'))

else:

print("Not in dumbDb")

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dumbDb.close()

=====

name: b'Joe'

cubicle: b'639'

phone: b'617.665.2154'

Go to [answer 14](#)

Question 15

True or False? The code in the top panel of [Figure 7](#) produces the output shown in the bottom panel of [Figure 7](#).

Figure 7 . Question 15.

import dbm.dumb

dumbDb = dbm.dumb.open('database', 'c')

#Create keys and values

myKeys = b'name',b'cubicle',b'phone',b'age',b'gender',b'marital'

myValues = b'Joe',b'639',b'333.444.5555',b'39',b'male',b'married'

#Populate the database

for cnt in range(len(myKeys)):

dumbDb[myKeys[cnt]] = myValues[cnt]

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```
print('Get and display values')
values = dumbDb.values()
for value in values:
    print(value)
```

(/contents/lrNEBZVi@32.48:CIU4fZwQ/itse1359-

```
print())#blank line
print('Get and display keys')
keys = dumbDb.keys()
for key in keys:
    print(key)
```

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```
print()
print('Attempt to pop and display two values')
print(dumbDb.pop(b'phone','no phone'))
print(dumbDb.pop(b'weight','no weight'))
```

```
print()
print('Get and display keys and values')
print('Database length',len(dumbDb))
items = dumbDb.items()
for item in items:
    print(item)
```

```
print()
print('Delete a key/value pair and display again')
del dumbDb[b'cubicle']
print('Database length',len(dumbDb))
items = dumbDb.items()
for item in items:
    print(item)
```

```
dumbDb.close()
```

```
=====
```

```
Get and display values
b'name'
b'age'
b'phone'
b'marital'
b'cubicle'
```

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Get and display keys

b'Joe'

b'39'

b'333.444.5555' (/contents/lrNEBZVi@32.48:CIU4fZwQ/itse1359-

b'married'

b'639'

b'male'

Attempt to pop and display two values

b'333.444.5555'

no weight

Get and display keys and values

Database length 5

(b'name', b'Joe')

(b'age', b'39')

(b'marital', b'married')

(b'cubicle', b'639')

(b'gender', b'male')

Delete a key/value pair and display again

Database length 4

(b'name', b'Joe')

(b'age', b'39')

(b'marital', b'married')

(b'gender', b'male')

Go to [answer 15](#)

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What is the meaning of the following two images?

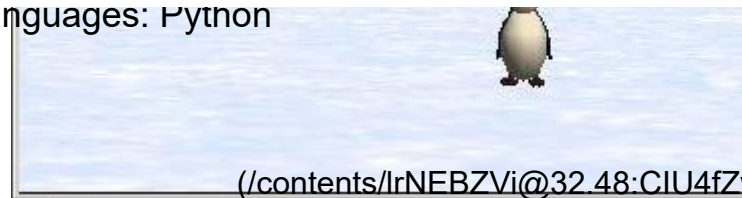
These images were inserted here simply to insert some space between the questions and the answers to keep them from being visible on the screen at the same time.



This image was also inserted for the purpose of inserting space between the questions and the answers.



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Answers

Answer 15

False. The output is shown in [Figure 8](#). The **keys** and the **values** were switched in the bottom panel of [Figure 7](#).

Figure 8 . Answer 15.

Get and display values

```
b'Joe'
b'39'
b'333.444.5555'
b'married'
b'639'
b'male'
```

Get and display keys

```
b'name'
b'age'
b'phone'
b'marital'
b'cubicle'
b'gender'
```

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Attempt to pop and display two values

```
b'333.444.5555'  
no weight
```

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Get and display keys and values
Database length 5

```
(b'name', b'Joe')  
(b'age', b'39')  
(b'marital', b'married')  
(b'cubicle', b'639')  
(b'gender', b'male')
```

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Delete a key/value pair and display again

```
Database length 4  
(b'name', b'Joe')  
(b'age', b'39')  
(b'marital', b'married')  
(b'gender', b'male')
```

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Answer 14

True.

Go back to [Question 14](#)

Answer 13

False. The output is shown in [Figure 5](#). The **in** operator searches for a match in the **keys** and does not search for a match in the **values**.

Figure 5 . Answer 13.

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Not in dumbDb

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Answer 12

True.

Go back to [Question 12](#)

Answer 11

False. The code in [Figure 1](#) produces an error by attempting to store a number as a value. The output (*with some text deleted for brevity*) is shown in [Figure 2](#).

Figure 2 . Answer 11.

```
Traceback (most recent call last):
  File "1359-1930-11.py", line 11, in <module>
    dumbDb[b'aNumber'] = 1234
...
    raise TypeError("values must be bytes or strings")
TypeError: values must be bytes or strings
```

Go back to [Question 11](#)

Answer 10

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True. See [The Python Standard Library - 12.5. dbm - Interfaces to Unix "databases"](https://docs.python.org/3/library/dbm.html) (<https://docs.python.org/3/library/dbm.html>) .

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Answer 9

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True as of 11/09/2014.

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Answer 8

True. See comments in sample code at [The Python Standard Library - 12.5. dbm - Interfaces to Unix "databases"](https://docs.python.org/3/library/dbm.html) (<https://docs.python.org/3/library/dbm.html>) .

Go back to [Question 8](#)

Answer 7

False. The object returned by **dbm.open** supports the same basic functionality as **dictionaries** . Keys and their corresponding values can be stored, retrieved, and deleted. The **in** operator and the **keys** method are available, as well as **get** and **setdefault** .

Go back to [Question 7](#)

Answer 6

False. The function named **dbm.open** can be called to open an existing **dbm** database file or to create a new **dbm** database file.

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Answer 5

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True.

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Answer 4

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False. **dbm** is a generic interface to variants of the DBM databases - **dbm.gnu** or **dbm.ndbm** . If neither of these modules is installed, the slow-but-simple implementation in module **dbm.dumb** will be used.

Go back to [Question 4](#)

Answer 3

False. As of 11/09/2014, no such warning appears on the referenced webpage. Therefore, it might be concluded that even though **shelve** has features that are not available in **dbm** , **dbm** is the more secure of the two. As a result, this course will concentrate on **dbm** and ignore **shelve** .

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Answer 2

True as of 11/09/2014.

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Answer 1

True as of 11/09/2014.

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Miscellaneous

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- File: Itse1359-1930.htm
- Published: 11/10/14
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