

Assignment 2

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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SALst.SALst	12
SeqADT.SeqADT	16
Enum	
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Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

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Chapter 4

Class Documentation

4.1 AALst.AALst Class Reference

Abstract data type that represents the allocated sequence.

Static Public Member Functions

- def `init` ()
init function
- def `add_stdnt` (d, m)
add_stdnt function
- def `lst_alloc` (d)
lst_alloc function
- def `num_alloc` (d)
num_alloc function

Static Public Attributes

- list `s` = []

4.1.1 Detailed Description

Abstract data type that represents the allocated sequence.

4.1.2 Member Function Documentation

4.1.2.1 `add_stdnt()`

```
def AALst.AALst.add_stdnt (  
    d,  
    m ) [static]
```

`add_stdnt` function

Adds students to the list of the corresponding department

Parameters

<i>d</i>	Department name
<i>m</i>	macid of the student

4.1.2.2 init()

```
def AALst.AALst.init ( ) [static]
```

init function

Initializes a sequence with tuples of department name and empty list

4.1.2.3 lst_alloc()

```
def AALst.AALst.lst_alloc (
    d ) [static]
```

lst_alloc function

Retrieves the list of macids of students allocated to the department

Parameters

<i>d</i>	Department name
----------	-----------------

Returns

List of macids of students allocated to the department

4.1.2.4 num_alloc()

```
def AALst.AALst.num_alloc (
    d ) [static]
```

num_alloc function

Number of students allocated to a department

Parameters

<i>d</i>	Department name
----------	-----------------

Returns

length of a list corresponding to a department represting number of students allocated

The documentation for this class was generated from the following file:

- src/[AALst.py](#)

4.2 DCapALst.DCapALst Class Reference

[DCapALst](#) is an abstract data type.

Static Public Member Functions

- def [init](#) ()
init function
- def [add](#) (d, n)
add function
- def [remove](#) (d)
remove function
- def [elm](#) (d)
elm function
- def [capacity](#) (d)
capacity function

Static Public Attributes

- list **s** = []

4.2.1 Detailed Description

[DCapALst](#) is an abstract data type.

4.2.2 Member Function Documentation

4.2.2.1 add()

```
def DCapALst.DCapALst.add (  
    d,  
    n ) [static]
```

add function

Adds a department and its capacity to the sequence

Parameters

<i>d</i>	Department name
<i>n</i>	Department capacity

Exceptions

<i>KeyError</i>	raised if department already exists in the sequence
-----------------	---

4.2.2.2 capacity()

```
def DCapALst.DCapALst.capacity (  
    d ) [static]
```

capacity function

Gets capacity of the department

Parameters

<i>d</i>	Department name
----------	-----------------

Exceptions

<i>KeyError</i>	raised if department not in the sequence
-----------------	--

Returns

Returns department capacity

4.2.2.3 elm()

```
def DCapALst.DCapALst.elm (  
    d ) [static]
```

elm function

Checks if the department is in the sequence

Parameters

<i>d</i>	Department name
----------	-----------------

Returns

Boolean value representing if department is in the sequence

4.2.2.4 init()

```
def DCapALst.DCapALst.init ( ) [static]
```

init function

Initializes the sequence to an empty sequence

4.2.2.5 remove()

```
def DCapALst.DCapALst.remove (
    d ) [static]
```

remove function

Removes a department and its capacity from the sequence

Parameters

<i>d</i>	Department name
----------	-----------------

Exceptions

<i>KeyError</i>	if department is not in sequence
-----------------	----------------------------------

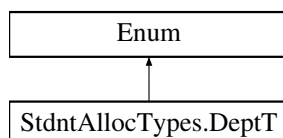
The documentation for this class was generated from the following file:

- [src/DCapALst.py](#)

4.3 StdntAllocTypes.DeptT Class Reference

An enumerated type representing the department set.

Inheritance diagram for StdntAllocTypes.DeptT:



Static Public Attributes

- int **civil** = 1
- int **chemical** = 2
- int **electrical** = 3
- int **mechanical** = 4
- int **software** = 5
- int **materials** = 6
- int **engphys** = 7

4.3.1 Detailed Description

An enumerated type representing the department set.

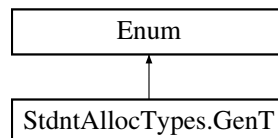
The documentation for this class was generated from the following file:

- [src/StdntAllocTypes.py](#)

4.4 StdntAllocTypes.GenT Class Reference

An enumerated type representing the gender set.

Inheritance diagram for StdntAllocTypes.GenT:



Static Public Attributes

- int **male** = 1
- int **female** = 2

4.4.1 Detailed Description

An enumerated type representing the gender set.

The documentation for this class was generated from the following file:

- [src/StdntAllocTypes.py](#)

4.5 SALst.SALst Class Reference

Abstract data type that represents a sequence with student information.

Public Member Functions

- def [average](#) (f)
average function
- def [allocate](#) ()
allocate function

Static Public Member Functions

- def [init](#) ()
init function
- def [add](#) (m, i)
add function
- def [remove](#) (m)
remove function
- def [elm](#) (m)
elem function
- def [info](#) (m)
info function
- def [sort](#) (f)
sort function

Static Public Attributes

- list **s** = []

4.5.1 Detailed Description

Abstract data type that represents a sequence with student information.

4.5.2 Member Function Documentation

4.5.2.1 add()

```
def SALst.SALst.add (
    m,
    i ) [static]
```

add function

Adds a student's information to the sequence

Parameters

<i>m</i>	macid of the student
<i>i</i>	Student information of type SInfoT

Exceptions

<i>KeyError</i>	raised if information for student already exists in the sequence
-----------------	--

4.5.2.2 allocate()

```
def SALst.SALst.allocate ( )
```

allocate function

Allocates students to their respective departments based on choices selected, Gpa, and freechoice

4.5.2.3 average()

```
def SALst.SALst.average (
    f )
```

average function

calculates the average gpa students that meet the condition specified

Parameters

<i>f</i>	condition that filters students that don't meet its standards
----------	---

Returns

Average gpa of students that meet condition f

4.5.2.4 elm()

```
def SALst.SALst.elm (
    m ) [static]
```

elem function

Checks if student information is in sequence

Parameters

<i>m</i>	macid of the student
----------	----------------------

Returns

Boolean value representing if information in sequence

4.5.2.5 info()

```
def SALst.SALst.info (
    m ) [static]
```

info function

Retrieves a student's information based on macid

Parameters

<i>m</i>	macid of the student
----------	----------------------

Exceptions

<i>ValueError</i>	raised if student is not in sequence
-------------------	--------------------------------------

Returns

Information of the specific student of type SInfoT

4.5.2.6 init()

```
def SALst.SALst.init ( ) [static]
```

init function

Initializes an empty sequence

4.5.2.7 remove()

```
def SALst.SALst.remove (
    m ) [static]
```

remove function

Removes the information of the student in the sequence

Parameters

<i>m</i>	macid of the student
----------	----------------------

Exceptions

<i>KeyError</i>	raised if macid not in the sequence
-----------------	-------------------------------------

4.5.2.8 sort()

```
def SALst.SALst.sort (
    f ) [static]
```

sort function

Sorts the students in order of descending gpa

Parameters

<i>f</i>	condition that filters macids that don't meet its standards
----------	---

Returns

A sequence of macids in order of descending gpa of the students that passed the condition *f*

The documentation for this class was generated from the following file:

- [src/SALst.py](#)

4.6 SeqADT.SeqADT Class Reference

Abstract data type for sequence manipulation.

Public Member Functions

- def [__init__](#) (self, x)
SeqADT constructor.
- def [start](#) (self)
start function
- def [next](#) (self)
next function
- def [end](#) (self)
end function

Public Attributes

- **s**
- **i**

4.6.1 Detailed Description

Abstract data type for sequence manipulation.

4.6.2 Constructor & Destructor Documentation

4.6.2.1 `__init__()`

```
def SeqADT.SeqADT.__init__ (
    self,
    x )
```

[SeqADT](#) constructor.

takes a list of values

Parameters

x	list of values
---	----------------

4.6.3 Member Function Documentation

4.6.3.1 `end()`

```
def SeqADT.SeqADT.end (
    self )
```

end function

checks if index reached end of list

Returns

boolean value representing if index, i, is at the end of the list

4.6.3.2 `next()`

```
def SeqADT.SeqADT.next (
    self )
```

next function

increments index, i, of list

Exceptions

<i>StopIteration</i>	if index, i, is equal to the length of list
----------------------	---

Returns

element of list at index, i, before increment

4.6.3.3 start()

```
def SeqADT.SeqADT.start (
    self )
```

start function

sets index, i, of list to 0

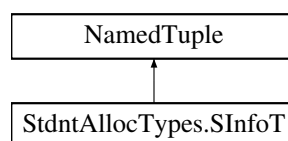
The documentation for this class was generated from the following file:

- [src/SeqADT.py](#)

4.7 StdntAllocTypes.SInfoT Class Reference

A named tuple representing general information for a student.

Inheritance diagram for StdntAllocTypes.SInfoT:

**4.7.1 Detailed Description**

A named tuple representing general information for a student.

The documentation for this class was generated from the following file:

- [src/StdntAllocTypes.py](#)

Chapter 5

File Documentation

5.1 src/AALst.py File Reference

AALst.

Classes

- class [AALst.AALst](#)
Abstract data type that represents the allocated sequence.

5.1.1 Detailed Description

AALst.

Author

Harsh Patel

Date

11/02/2019

5.2 src/DCapALst.py File Reference

DCapALst.

Classes

- class [DCapALst.DCapALst](#)
[DCapALst](#) is an abstract data type.

5.2.1 Detailed Description

DCapALst.

Author

Harsh Patel

Date

11/02/2019

5.3 src/Read.py File Reference

Reads files and loads data.

Functions

- def [Read.load_stdnt_data](#) (s)
Reads stduent data from text file.
- def [Read.load_dcap_data](#) (s)
Reads department data from text file.

5.3.1 Detailed Description

Reads files and loads data.

Author

Harsh Patel

Date

11/02/2019

5.3.2 Function Documentation

5.3.2.1 load_dcap_data()

```
def Read.load_dcap_data (  
    s )
```

Reads department data from text file.

Populates DCapALst with department and capacity data

Parameters

s	String representing name of the text file
---	---

5.3.2.2 load_stdnt_data()

```
def Read.load_stdnt_data (
    s )
```

Reads student data from text file.

Populates SALst with student data from the text file

Parameters

s	String representing name of the text file
---	---

5.4 src/SALst.py File Reference

SALst.

Classes

- class [SALst.SALst](#)
Abstract data type that represents a sequence with student information.

5.4.1 Detailed Description

SALst.

Author

Harsh Patel

Date

11/02/2019

5.5 src/SeqADT.py File Reference

SeqADT.

Classes

- class [SeqADT.SeqADT](#)
Abstract data type for sequence manipulation.

5.5.1 Detailed Description

SeqADT.

Author

Harsh Patel

Date

11/02/2019

5.6 src/StdntAllocTypes.py File Reference

Enumerated types and NamedTuples.

Classes

- class [StdntAllocTypes.GenT](#)
An enumerated type representing the gender set.
- class [StdntAllocTypes.DeptT](#)
An enumerated type representing the department set.
- class [StdntAllocTypes.SInfoT](#)
A named tuple representing general information for a student.

5.6.1 Detailed Description

Enumerated types and NamedTuples.

Author

Harsh Patel

Date

11/02/2019

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