

Project-3

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Chapter 1

Class Index

1.1 Class List

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

DelimTextBuffer	5
State	12
Zipcode	15

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

deltext.cpp	23
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Takes a csv file containing US postal codes as inputs and generates an output table consisting of each of the state's easternmost, westernmost, northernmost and southernmost zipcodes based on latitude and longitude comparisons	26
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Chapter 3

Class Documentation

3.1 DelimTextBuffer Class Reference

```
#include <deltext.h>
```

Collaboration diagram for DelimTextBuffer:

DelimTextBuffer
<ul style="list-style-type: none">- Delim- DelimStr- Buffer- Rbuffer- BufferSize- MaxBytes- NextByte- count
<ul style="list-style-type: none">+ DelimTextBuffer()+ Clear()+ Read()+ Pack()+ Unpack()+ Init()+ Print()+ Write()

Public Member Functions

- [DelimTextBuffer](#) (char [Delim](#)=';', int maxBytes=10000)
- void [Clear](#) ()
- int [Read](#) (std::istream &)
- int [Pack](#) (const char *, int size=-1)
- int [Unpack](#) (char *)
- int [Init](#) (char delim, int maxBytes=10000)
- void [Print](#) (std::ostream &) const
- int [Write](#) (std::ostream &) const

Private Attributes

- char [Delim](#)
- char [DelimStr](#) [3]
- char * [Buffer](#)
- std::string [Rbuffer](#)
- int [BufferSize](#)
- int [MaxBytes](#)
- int [NextByte](#)
- int [count](#)

3.1.1 Constructor & Destructor Documentation

3.1.1.1 DelimTextBuffer()

```
DelimTextBuffer::DelimTextBuffer (
    char Delim = ' ',
    int maxBytes = 10000 )
```

Constructor;

Parameters

<i>Delim</i>	the delimiter character to be used
<i>maxBytes</i>	maximum number of characters in the buffer

Precondition

none

Postcondition

a buffer of size maxBytes is created with Delim as the delimiter

3.1.2 Member Function Documentation

3.1.2.1 Clear()

```
void DelimTextBuffer::Clear ( )
```

MODIFICATION MEMBER FUNCTIONS Clear; Clear fields from buffer

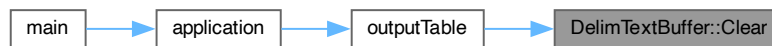
Precondition

a [DelimTextBuffer](#) must exist

Postcondition

the fields in the buffer are empty

Here is the caller graph for this function:

**3.1.2.2 Init()**

```
int DelimTextBuffer::Init (  
    char delim,  
    int maxBytes = 10000 )
```

Init Initialize the buffer

Parameters

<i>delim</i>	a character delimiter for the buffer
<i>maxBytes</i>	the maximum number of characters in the buffer(default 10000)

Precondition

a [DelimTextBuffer](#) must exist

Postcondition

the buffer is inialized to have *delim* as the delimiter and a *maxBytes* of maximum characters

3.1.2.3 Pack()

```
int DelimTextBuffer::Pack (  
    const char * str,  
    int size = -1 )
```

Pack; Packs the next value into a c style string

Parameters

<i>a</i>	c style string
<i>size</i>	of the c style string

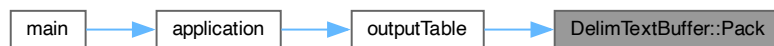
Precondition

a [DelimTextBuffer](#) must exist

Postcondition

a c style string is packed from the buffer

Here is the caller graph for this function:

**3.1.2.4 Print()**

```
void DelimTextBuffer::Print (
    std::ostream & stream ) const
```

NONMODIFICATION MEMBER FUNCTIONS Print; Prints the maximum size and characters for the buffer

Parameters

<i>ostream</i>	object
----------------	--------

Precondition

a [DelimTextBuffer](#) must exist

Postcondition

the maximum size and characters for the buffer are written to an ostream object

3.1.2.5 Read()

```
int DelimTextBuffer::Read (
    std::istream & stream )
```

Read; Reads into the buffer from an istream object

Parameters

<i>istream</i>	object
----------------	--------

Precondition

a [DelimTextBuffer](#) must exist

Postcondition

a single line from an *istream* object is read into the buffer

Here is the caller graph for this function:

**3.1.2.6 Unpack()**

```
int DelimTextBuffer::Unpack (  
    char * str )
```

Unpack; Unpacks a c style string into the buffer

Parameters

<i>a</i>	c style string
----------	----------------

Precondition

a [DelimTextBuffer](#) must exist

Postcondition

a c style string is unpacked into the buffer

3.1.2.7 Write()

```
int DelimTextBuffer::Write (  
    std::ostream & stream ) const
```

Write; Writes the entire buffer to an ostream object

Parameters

<i>ostream</i>	object
----------------	--------

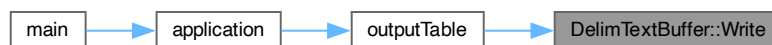
Precondition

a [DelimTextBuffer](#) must exist

Postcondition

the entire buffer is written into an ostream object with delimiters

Here is the caller graph for this function:



3.1.3 Member Data Documentation

3.1.3.1 Buffer

```
char* DelimTextBuffer::Buffer [private]
```

character array to hold field values

3.1.3.2 BufferSize

```
int DelimTextBuffer::BufferSize [private]
```

size of packed fields

3.1.3.3 count

```
int DelimTextBuffer::count [private]
```

count if it is the end

3.1.3.4 Delim

```
char DelimTextBuffer::Delim [private]
```

delimiter character

3.1.3.5 DelimStr

```
char DelimTextBuffer::DelimStr[3] [private]
```

zero terminated string for Delim

3.1.3.6 MaxBytes

```
int DelimTextBuffer::MaxBytes [private]
```

maximum number of characters in the buffer

3.1.3.7 NextByte

```
int DelimTextBuffer::NextByte [private]
```

packing/unpacking position in buffer

3.1.3.8 Rbuffer

```
std::string DelimTextBuffer::Rbuffer [private]
```

string buffer

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

- [deltext.h](#)
- [deltext.cpp](#)

3.2 State Class Reference

```
#include <State.h>
```

Collaboration diagram for State:



Public Member Functions

- [State](#) ()

Public Attributes

- char [stateName](#) [5]
- char [easternZipcode](#) [10]
- char [westernZipcode](#) [10]
- char [northernZipcode](#) [10]
- char [southernZipcode](#) [10]
- char [largestLong](#) [10]
- char [smallestLong](#) [10]
- char [largestLat](#) [10]
- char [smallestLat](#) [10]

3.2.1 Constructor & Destructor Documentation

3.2.1.1 State()

```
State::State ( )
```

3.2.2 Member Data Documentation

3.2.2.1 easternZipcode

```
char State::easternZipcode[10]
```

3.2.2.2 largestLat

```
char State::largestLat[10]
```

3.2.2.3 largestLong

```
char State::largestLong[10]
```

3.2.2.4 northernZipcode

```
char State::northernZipcode[10]
```

3.2.2.5 smallestLat

```
char State::smallestLat[10]
```

3.2.2.6 smallestLong

```
char State::smallestLong[10]
```

3.2.2.7 southernZipcode

```
char State::southernZipcode[10]
```

3.2.2.8 stateName

```
char State::stateName[5]
```

Data members

3.2.2.9 westernZipcode

```
char State::westernZipcode[10]
```

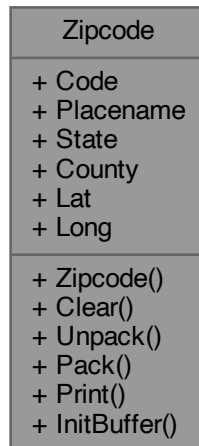
The documentation for this class was generated from the following file:

- [State.h](#)

3.3 Zipcode Class Reference

```
#include <zipcode.h>
```

Collaboration diagram for Zipcode:



Public Member Functions

- `Zipcode ()`
- `void Clear ()`
- `int Unpack (DelimTextBuffer &)`
- `int Pack (DelimTextBuffer &) const`
- `void Print (std::ostream &)`

Static Public Member Functions

- `static int InitBuffer (DelimTextBuffer &)`

Public Attributes

- `char Code [10]`
- `char Placename [30]`
- `char State [5]`
- `char County [25]`
- `char Lat [10]`
- `char Long [10]`

3.3.1 Constructor & Destructor Documentation

3.3.1.1 Zipcode()

```
Zipcode::Zipcode ( )
```

Constructor

Postcondition

Initializes an empty [Zipcode](#) object

Here is the call graph for this function:



3.3.2 Member Function Documentation

3.3.2.1 Clear()

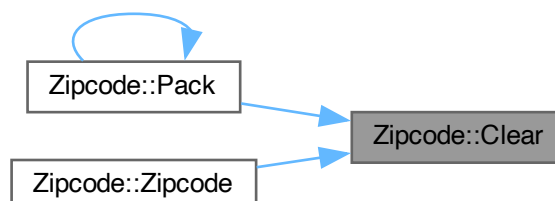
```
Zipcode::Clear ( )
```

Sets all fields to empty strings

Postcondition

All fields set to empty strings

Here is the caller graph for this function:



3.3.2.2 InitBuffer()

```
Zipcode::InitBuffer (
    DelimTextBuffer & Buffer ) [static]
```

Initializes a [DelimTextBuffer](#) object

Parameters

<i>the</i>	<code>DelimTextBuffer</code> to be initialized
------------	--

Precondition

a `Zipcode` object must exist

Postcondition

the `DelimTextBuffer` object is initialized

3.3.2.3 Pack()

```
Zipcode::Pack (  
    DelimTextBuffer & Buffer ) const
```

Packs the `Zipcode` object into a `DelimTextBuffer` object

Parameters

<i>The</i>	<code>DelimTextBuffer</code> to pack
------------	--------------------------------------

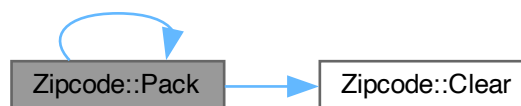
Precondition

`DelimTextBuffer` must exist and be initialized

Postcondition

the `Zipcode` object is packed into a `DelimTextBuffer`

Here is the call graph for this function:



Here is the caller graph for this function:



3.3.2.4 Print()

```
Zipcode::Print (
    std::ostream & stream )
```

Prints [Zipcode](#) object into an ostream object

Parameters

<i>ostream</i>	object to print to
----------------	--------------------

Postcondition

Fields from [Zipcode](#) are written into ostream object

3.3.2.5 Unpack()

```
Zipcode::Unpack (
    DelimTextBuffer & Buffer )
```

Unpacks [DelimTextBuffer](#) into [Zipcode](#) object

Parameters

<i>the</i>	DelimTextBuffer to be unpacked
------------	--

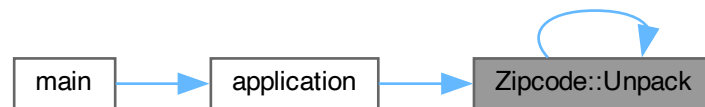
Postcondition

the `DelimTextBuffer` is unpacked into a `Zipcode` object

Here is the call graph for this function:



Here is the caller graph for this function:



3.3.3 Member Data Documentation

3.3.3.1 Code

```
char Zipcode::Code[10]
```

3.3.3.2 County

```
char Zipcode::County[25]
```

3.3.3.3 Lat

```
char Zipcode::Lat[10]
```


3.3.3.4 Long

```
char Zipcode::Long[10]
```

3.3.3.5 Placename

```
char Zipcode::Placename[30]
```

3.3.3.6 State

```
char Zipcode::State[5]
```

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

- [zipcode.h](#)
- [zipcode.cpp](#)

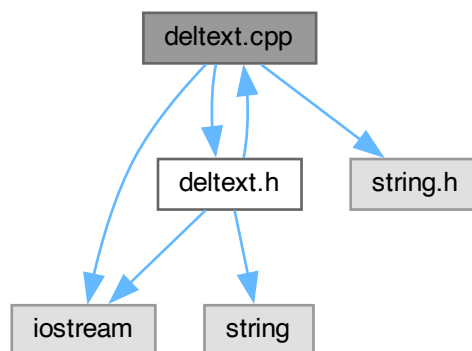
Chapter 4

File Documentation

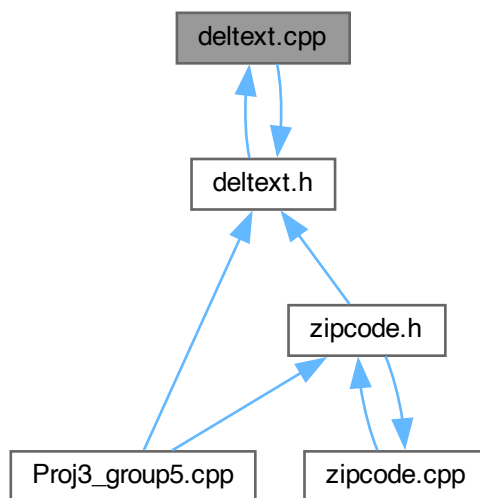
4.1 deltext.cpp File Reference

```
#include "deltext.h"  
#include <string.h>  
#include <iostream>
```

Include dependency graph for deltext.cpp:

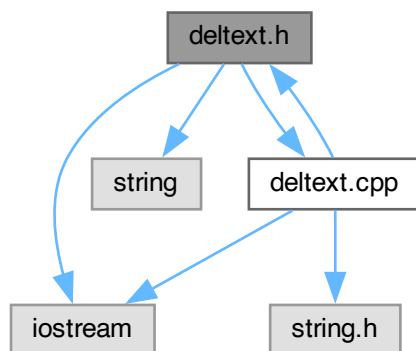


This graph shows which files directly or indirectly include this file:

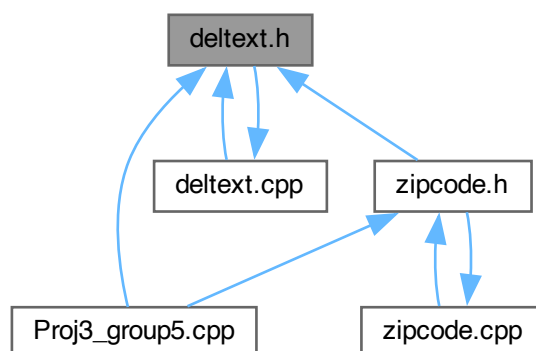


4.2 deltext.h File Reference

```
#include <iostream>
#include <string>
#include "deltext.cpp"
Include dependency graph for deltext.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [DelimTextBuffer](#)

Macros

- `#define FALSE (0)`
- `#define TRUE (1)`

4.2.1 Macro Definition Documentation

4.2.1.1 FALSE

```
#define FALSE (0)
```

4.2.1.2 TRUE

```
#define TRUE (1)
```

4.3 deltext.h

[Go to the documentation of this file.](#)

```

00001 // deltext.h
00002 // Modified example from text book
00003
00004 #ifndef DELTEXT_H
00005 #define DELTEXT_H
00006
00007 /*provides ostream and istream*/
00008 #include <iostream>
00009 /*provides use of c++ strings*/
00010 #include <string>
00011
00012 #ifndef FALSE
00013 #define FALSE (0)
00014 #define TRUE (1)
00015 #endif
00016
00017 class DelimTextBuffer
00018 // a buffer which holds delimited text fields.
00019 // Record variables can be packed into and extracted from a buffer.
00020 { public:
00021     DelimTextBuffer (char Delim = ',', int maxBytes = 10000);
00022
00023     void Clear (); // clear fields from buffer
00024
00025     int Read (std::istream &);
00026
00027     int Pack (const char *, int size = -1);
00028
00029     int Unpack (char *);
00030
00031     int Init (char delim, int maxBytes = 10000);
00032
00033     void Print (std::ostream &) const;
00034
00035     int Write (std::ostream &) const;
00036
00037 private:
00038     char Delim;
00039     char DelimStr[3];
00040     char * Buffer;
00041     std::string Rbuffer;
00042     int BufferSize;
00043     int MaxBytes;
00044     int NextByte;
00045     int count;
00046 };
00047
00048 #include "deltext.cpp"
00049 #endif

```

4.4 Proj3_group5.cpp File Reference

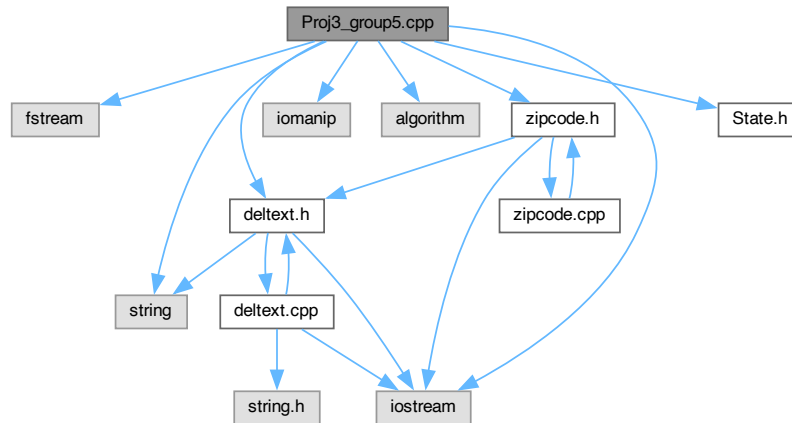
Takes a csv file containing US postal codes as inputs and generates an output table consiting of each of the state's easternmost, westernmost, northernmost and southernmost zipcodes based on latitude and longitude comparisons.

```

#include <fstream>
#include <iostream>
#include <string>
#include <iomanip>
#include <algorithm>
#include "deltext.h"
#include "zipcode.h"
#include "State.h"

```

Include dependency graph for Proj3_group5.cpp:



Functions

- bool [compareStates](#) ([State](#) a, [State](#) b)
- void [constructStateArray](#) ([State](#) sArray[], [Zipcode](#) zArray[], int zArraySize)
- void [setZipCodes](#) ([State](#) sArray[], [Zipcode](#) zArray[], int zArraySize)
- void [outputTable](#) (std::string outputFileName, [DelimTextBuffer](#) OutBuff, [State](#) sArray[])
- void [application](#) ()
- int [main](#) ()

4.4.1 Detailed Description

Takes a csv file containing US postal codes as inputs and generates an output table consisting of each of the state's easternmost, westernmost, northernmost and southernmost zipcodes based on latitude and longitude comparisons.

Author

Steven Kraus
Emily Yang
Tyler Knudtson
Ashesh Nepal

4.4.2 Function Documentation

4.4.2.1 application()

```
application ( )
```

Contains the code for controlling the [Zipcode](#) class and generating output file.

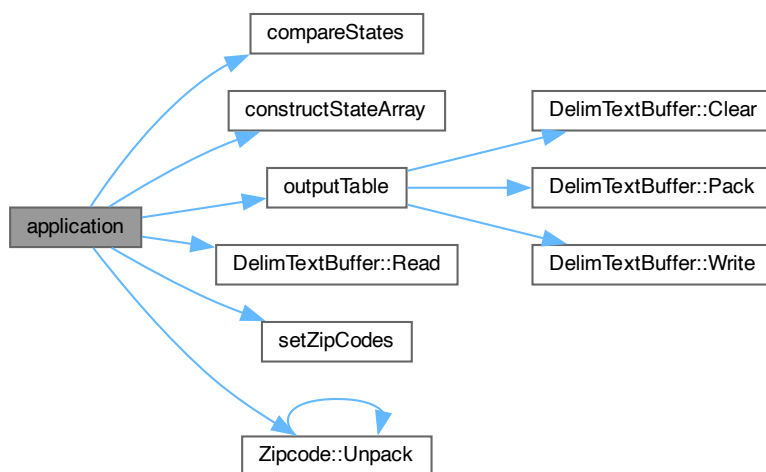
Precondition

specified InFile must be present

Postcondition

sorted OutFile with zip codes from each state will be created

Here is the call graph for this function:



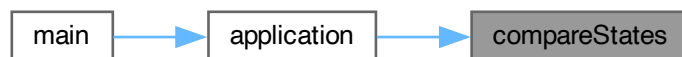
Here is the caller graph for this function:



4.4.2.2 compareStates()

```
bool compareStates (  
    State a,  
    State b )
```

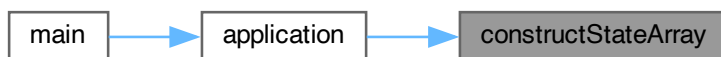
Here is the caller graph for this function:



4.4.2.3 constructStateArray()

```
void constructStateArray (  
    State sArray[],  
    Zipcode zArray[],  
    int zArraySize )
```

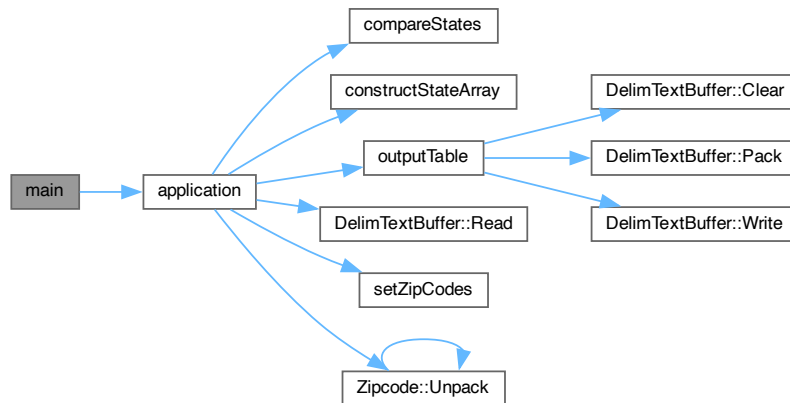
Here is the caller graph for this function:



4.4.2.4 main()

```
main ( )
```

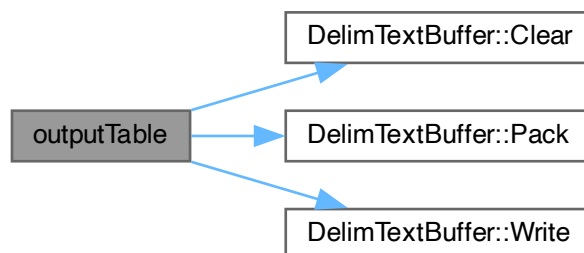
Executes the code present in `application()` Here is the call graph for this function:



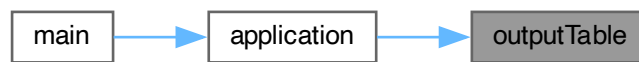
4.4.2.5 outputTable()

```
void outputTable (
    std::string outputFileName,
    DelimTextBuffer OutBuff,
    State sArray[] )
```

Here is the call graph for this function:



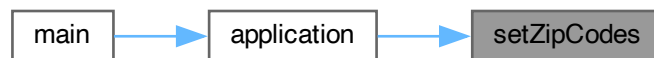
Here is the caller graph for this function:



4.4.2.6 setZipCodes()

```
void setZipCodes (
    State sArray[],
    Zipcode zArray[],
    int zArraySize )
```

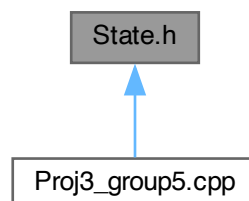
Here is the caller graph for this function:



4.5 State.h File Reference

Declaration file for [State](#) class.

This graph shows which files directly or indirectly include this file:



Classes

- class [State](#)

4.5.1 Detailed Description

Declaration file for [State](#) class.

Author

Steven Kraus
Emily Yang
Tyler Knudtson
Ashesh Nepal

4.6 State.h

[Go to the documentation of this file.](#)

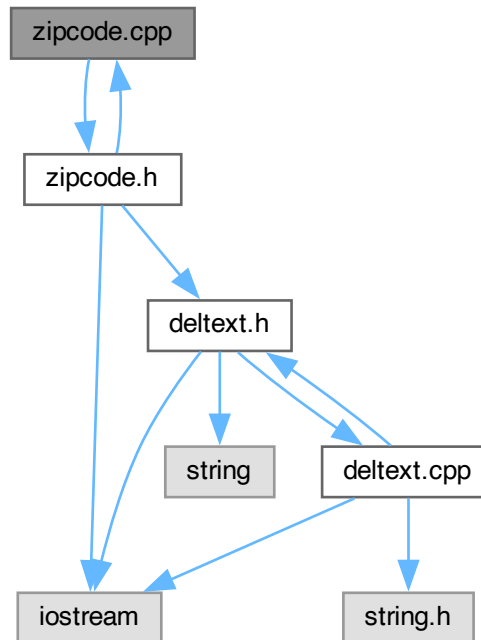
```
00001
00009 #ifndef STATE_H
00010 #define STATE_H
00011
00012 class State
00013 {
00014     //Data members set as public for easy access
00015 public:
00016     State();
00017     char stateName [5]; //State name abbreviation
00018     char easternZipcode [10]; //Easternmost Zipcode
00019     char westernZipcode [10]; // Westernmost Zipcode
00020     char northernZipcode [10]; //Northernmost Zipcode
00021     char southernZipcode [10]; //Southernmost Zipcode
00022     char largestLong [10]; //Largest longitude
00023     char smallestLong [10]; // Smallest longitude
00024     char largestLat [10]; //Largest Latitude
00025     char smallestLat [10]; // Smallest Latitude
00026 };
00027 };
00028
00029
00030 State::State()
00031 {
00032     // Set each field to an empty string
00033     stateName[0] = 0;
00034     easternZipcode[0] = 0;
00035     westernZipcode[0] = 0;
00036     northernZipcode[0] = 0;
00037     southernZipcode[0] = 0;
00038     largestLong[0] = 0;
00039     smallestLong[0] = 0;
00040     largestLat[0] = 0;
00041     smallestLat[0] = 0;
00042 }
00043 #endif
```

4.7 zipcode.cpp File Reference

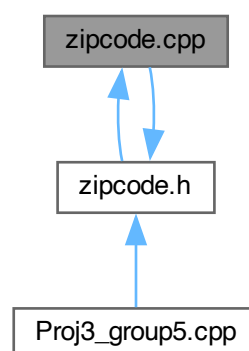
Implementation file for [Zipcode](#) class.

```
#include "zipcode.h"
```

Include dependency graph for zipcode.cpp:



This graph shows which files directly or indirectly include this file:



4.7.1 Detailed Description

Implementation file for [Zipcode](#) class.

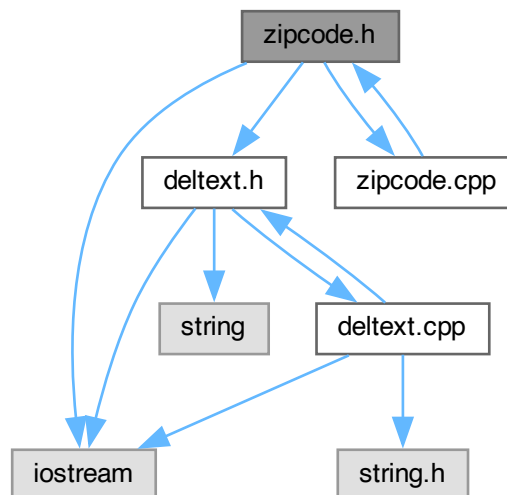
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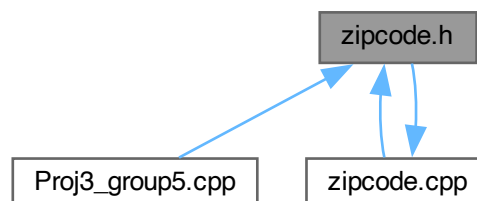
4.8 zipcode.h File Reference

Declaration file for [Zipcode](#) class.

```
#include <iostream>
#include "deltext.h"
#include "zipcode.cpp"
Include dependency graph for zipcode.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [Zipcode](#)

4.8.1 Detailed Description

Declaration file for [Zipcode](#) class.

Author

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Ashesh Nepal

4.9 zipcode.h

[Go to the documentation of this file.](#)

```
00001
00010 #ifndef ZIPCODE_H
00011 #define ZIPCODE_H
00012 #include <iostream>
00013 #include "deltext.h"
00014
00015
00016
00024 class Zipcode
00025 {
00026     public:
00027
00028         char Code [10];
00029         char Placename [30];
00030         char State [5];
00031         char County [25];
00032         char Lat [10];
00033         char Long [10];
00034
00039         Zipcode ();
00040
00041         /* MODIFICATION MEMBER FUNCTIONS*/
00042
00047         void Clear ();
00048
00055         static int InitBuffer (DelimTextBuffer &);
00056
00062         int Unpack (DelimTextBuffer &);
00063
00070         int Pack (DelimTextBuffer &) const;
00071
00072         /* NONMODIFICATION MEMBER FUNCTIONS*/
00073
00079         void Print (std::ostream &);
00080 };
00081
00082 #include "zipcode.cpp"
00083 #endif
```


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