

Projektowanie-zaawansowane

Generated by Doxygen 1.9.1

1 Class Index	1
1.1 Class List	1
2 File Index	3
2.1 File List	3
3 Class Documentation	5
3.1 DoublyLinkedList Class Reference	5
3.1.1 Detailed Description	5
3.1.2 Constructor & Destructor Documentation	5
3.1.2.1 DoublyLinkedList()	5
3.1.2.2 ~DoublyLinkedList()	6
3.1.3 Member Function Documentation	6
3.1.3.1 deleteAtIndex()	6
3.1.3.2 deleteFromBeginning()	6
3.1.3.3 deleteFromEnd()	7
3.1.3.4 deleteList()	7
3.1.3.5 displayBackward()	7
3.1.3.6 displayForward()	7
3.1.3.7 displayNext()	8
3.1.3.8 displayPrevious()	8
3.1.3.9 getNodeAtIndex()	8
3.1.3.10 insertAtBeginning()	8
3.1.3.11 insertAtEnd()	9
3.1.3.12 insertAtIndex()	9
3.2 Node Struct Reference	9
3.2.1 Detailed Description	10
3.2.2 Constructor & Destructor Documentation	10
3.2.2.1 Node()	10
3.2.3 Member Data Documentation	10
3.2.3.1 data	10
3.2.3.2 next	10
3.2.3.3 prev	10
4 File Documentation	11
4.1 zadanie1.cpp File Reference	11
4.1.1 Function Documentation	11
4.1.1.1 main()	11

Chapter 1

Class Index

1.1 Class List

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

DoublyLinkedList	5
Node	9

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

zadanie1.cpp	11
--	----

Chapter 3

Class Documentation

3.1 DoublyLinkedList Class Reference

Public Member Functions

- [DoublyLinkedList](#) ()
- void [insertAtBeginning](#) (int value)
- void [insertAtEnd](#) (int value)
- void [displayForward](#) ()
- void [deleteList](#) ()
- void [insertAtIndex](#) (int value, int index)
- void [deleteFromBeginning](#) ()
- void [deleteFromEnd](#) ()
- void [deleteAtIndex](#) (int index)
- void [displayBackward](#) ()
- [Node *](#) [getNodeAtIndex](#) (int index)
- void [displayNext](#) ([Node *](#)node)
- void [displayPrevious](#) ([Node *](#)node)
- [~DoublyLinkedList](#) ()

3.1.1 Detailed Description

Definition at line 14 of file zadanie1.cpp.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 DoublyLinkedList()

```
DoublyLinkedList::DoublyLinkedList ( ) [inline]
```

Definition at line 21 of file zadanie1.cpp.

```
21 : head(nullptr), tail(nullptr) {}
```

3.1.2.2 ~DoublyLinkedList()

DoublyLinkedList::~~DoublyLinkedList () [inline]

Definition at line 191 of file zadanie1.cpp.

```
191         {
192             deleteList(); // Usuwanie całej listy przy niszczeniu obiektu
193         }
```

3.1.3 Member Function Documentation

3.1.3.1 deleteAtIndex()

void DoublyLinkedList::deleteAtIndex (
int index) [inline]

Definition at line 126 of file zadanie1.cpp.

```
126         {
127             if (index == 0) {
128                 deleteFromBeginning();
129                 return;
130             }
131
132             Node* temp = head;
133             for (int i = 0; i < index && temp != nullptr; ++i) {
134                 temp = temp->next;
135             }
136
137             if (temp == nullptr) return; // Indeks poza zakresem
138
139             if (temp == tail) {
140                 deleteFromEnd();
141             }
142             else {
143                 temp->prev->next = temp->next;
144                 if (temp->next != nullptr) {
145                     temp->next->prev = temp->prev;
146                 }
147                 delete temp;
148             }
149         }
```

3.1.3.2 deleteFromBeginning()

void DoublyLinkedList::deleteFromBeginning () [inline]

Definition at line 98 of file zadanie1.cpp.

```
98         {
99             if (head == nullptr) return; // Lista pusta
100             Node* temp = head;
101             head = head->next;
102             if (head != nullptr) {
103                 head->prev = nullptr;
104             }
105             else {
106                 tail = nullptr;
107             }
108             delete temp;
109         }
```

3.1.3.3 deleteFromEnd()

```
void DoublyLinkedList::deleteFromEnd ( ) [inline]
```

Definition at line 112 of file zadanie1.cpp.

```
112     {
113         if (tail == nullptr) return; // Lista pusta
114         Node* temp = tail;
115         tail = tail->prev;
116         if (tail != nullptr) {
117             tail->next = nullptr;
118         }
119         else {
120             head = nullptr;
121         }
122         delete temp;
123     }
```

3.1.3.4 deleteList()

```
void DoublyLinkedList::deleteList ( ) [inline]
```

Definition at line 60 of file zadanie1.cpp.

```
60     {
61         Node* current = head;
62         while (current != nullptr) {
63             Node* next = current->next; // Zapisanie wskaźnika na następny węzeł
64             std::cout << "Usuwanie wezla o wartosci: " << current->data << std::endl;
65             delete current;           // Zwalnianie obecnego węzła
66             current = next;           // Przechodzenie do następnego węzła
67         }
68         head = tail = nullptr;       // Resetowanie wskaźników po usunięciu listy
69     }
```

3.1.3.5 displayBackward()

```
void DoublyLinkedList::displayBackward ( ) [inline]
```

Definition at line 152 of file zadanie1.cpp.

```
152     {
153         Node* temp = tail;
154         while (temp != nullptr) {
155             std::cout << temp->data << " -> ";
156             temp = temp->prev;
157         }
158         std::cout << "nullptr" << std::endl;
159     }
```

3.1.3.6 displayForward()

```
void DoublyLinkedList::displayForward ( ) [inline]
```

Definition at line 50 of file zadanie1.cpp.

```
50     {
51         Node* temp = head;
52         while (temp != nullptr) {
53             std::cout << temp->data << " -> ";
54             temp = temp->next;
55         }
56         std::cout << "nullptr" << std::endl;
57     }
```

3.1.3.7 displayNext()

```
void DoublyLinkedList::displayNext (
    Node * node ) [inline]
```

Definition at line 171 of file zadanie1.cpp.

```
171     {
172         if (node->next != nullptr) {
173             std::cout << "Nastepny element: " << node->next->data << std::endl;
174         }
175         else {
176             std::cout << "Brak nastepnego elementu." << std::endl;
177         }
178     }
```

3.1.3.8 displayPrevious()

```
void DoublyLinkedList::displayPrevious (
    Node * node ) [inline]
```

Definition at line 181 of file zadanie1.cpp.

```
181     {
182         if (node->prev != nullptr) {
183             std::cout << "Poprzedni element: " << node->prev->data << std::endl;
184         }
185         else {
186             std::cout << "Brak poprzedniego elementu." << std::endl;
187         }
188     }
```

3.1.3.9 getNodeAtIndex()

```
Node* DoublyLinkedList::getNodeAtIndex (
    int index ) [inline]
```

Definition at line 162 of file zadanie1.cpp.

```
162     {
163         Node* temp = head;
164         for (int i = 0; i < index && temp != nullptr; ++i) {
165             temp = temp->next;
166         }
167         return temp; // Zwraca wskaźnik na węzeł lub nullptr, jeśli indeks poza zakresem
168     }
```

3.1.3.10 insertAtBeginning()

```
void DoublyLinkedList::insertAtBeginning (
    int value ) [inline]
```

Definition at line 24 of file zadanie1.cpp.

```
24     {
25         Node* newNode = new Node(value); // Tworzenie nowego węzła
26         if (head == nullptr) {           // Jeśli lista jest pusta
27             head = tail = newNode;       // Head i tail wskazują na nowy węzeł
28         }
29         else {
30             newNode->next = head;         // Nowy węzeł wskazuje na obecny head
31             head->prev = newNode;         // Obecny head wskazuje na nowy węzeł jako prev
32             head = newNode;               // Aktualizacja head do nowego węzła
33         }
34     }
```

3.1.3.11 insertAtEnd()

```
void DoublyLinkedList::insertAtEnd (
    int value ) [inline]
```

Definition at line 37 of file zadanie1.cpp.

```
37     {
38         Node* newNode = new Node(value); // Tworzenie nowego węzła
39         if (tail == nullptr) {           // Jeśli lista jest pusta
40             head = tail = newNode;       // Head i tail wskazują na nowy węzeł
41         }
42         else {
43             tail->next = newNode;         // Ostatni węzeł wskazuje na nowy węzeł
44             newNode->prev = tail;         // Nowy węzeł wskazuje na stary tail
45             tail = newNode;              // Aktualizacja tail do nowego węzła
46         }
47     }
```

3.1.3.12 insertAtIndex()

```
void DoublyLinkedList::insertAtIndex (
    int value,
    int index ) [inline]
```

Definition at line 72 of file zadanie1.cpp.

```
72     {
73         if (index == 0) {
74             insertAtBeginning(value);
75             return;
76         }
77
78         Node* newNode = new Node(value);
79         Node* temp = head;
80         for (int i = 0; i < index - 1 && temp != nullptr; ++i) {
81             temp = temp->next;
82         }
83
84         if (temp == nullptr || temp == tail) {
85             insertAtEnd(value);
86         }
87         else {
88             newNode->next = temp->next;
89             newNode->prev = temp;
90             if (temp->next != nullptr) {
91                 temp->next->prev = newNode;
92             }
93             temp->next = newNode;
94         }
95     }
```

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

- [zadanie1.cpp](#)

3.2 Node Struct Reference

Public Member Functions

- [Node](#) (int value)

Public Attributes

- `int data`
- `Node * prev`
- `Node * next`

3.2.1 Detailed Description

Definition at line 4 of file `zadanie1.cpp`.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 Node()

```
Node::Node (
    int value ) [inline]
```

Definition at line 10 of file `zadanie1.cpp`.

```
10 : data(value), prev(nullptr), next(nullptr) {}
```

3.2.3 Member Data Documentation

3.2.3.1 data

```
int Node::data
```

Definition at line 5 of file `zadanie1.cpp`.

3.2.3.2 next

```
Node* Node::next
```

Definition at line 7 of file `zadanie1.cpp`.

3.2.3.3 prev

```
Node* Node::prev
```

Definition at line 6 of file `zadanie1.cpp`.

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

- `zadanie1.cpp`

Chapter 4

File Documentation

4.1 zadanie1.cpp File Reference

```
#include <iostream>
```

Classes

- struct [Node](#)
- class [DoublyLinkedList](#)

Functions

- int [main](#) ()

4.1.1 Function Documentation

4.1.1.1 main()

```
int main ( )
```

Definition at line 197 of file zadanie1.cpp.

```
197     {
198         DoublyLinkedList list;
199
200         // Dodawanie elementów na początku listy
201         list.insertAtBeginning(33);
202         list.insertAtBeginning(27);
203         list.insertAtBeginning(14);
204
205
206         // Dodawanie elementów na końcu listy
207         list.insertAtEnd(99);
208         list.insertAtEnd(73);
209
210         // Dodawanie elementu pod wskazany indeks
211         list.insertAtIndex(54, 2);
```

```
212
213 // Wyświetlanie listy od początku
214 std::cout << "Lista dwukierunkowa: ";
215 list.displayForward();
216
217 // Test funkcji displayNext oraz displayPrevious
218 Node* nodeAtIndex1 = list.getNodeAtIndex(1); // Pobieramy węzeł o indeksie 1
219 if (nodeAtIndex1 != nullptr) {
220     std::cout << "Wywołanie funkcji displayNext dla wezła o indeksie 1 (wartosc: " <<
nodeAtIndex1->data << "):" << std::endl;
221     list.displayNext(nodeAtIndex1); // Wyświetla następny element po węźle
222
223     std::cout << "Wywołanie funkcji displayPrevious dla wezła o indeksie 1 (wartosc: " <<
nodeAtIndex1->data << "):" << std::endl;
224     list.displayPrevious(nodeAtIndex1); // Wyświetla poprzedni element przed węzłem
225 }
226
227 // Usuwanie elementu z początku listy
228 std::cout << "Usuwanie elementu z początku" << std::endl;
229 list.deleteFromBeginning();
230 list.displayForward();
231
232 // Usuwanie elementu z końca listy
233 std::cout << "Usuwanie elementu z konca:" << std::endl;
234 list.deleteFromEnd();
235 list.displayForward();
236
237 // Usuwanie elementu z danego indexu
238 std::cout << "Usuwanie elementu z danego indeksu:" << std::endl;
239 list.deleteAtIndex(2);
240 list.displayForward();
241
242 // Wyświetlanie listy od końca
243 std::cout << "Wyświetlanie listy od konca:" << std::endl;
244 list.displayBackward();
245
246 // Usuwanie całej listy
247 std::cout << "Usuwanie całej listy:" << std::endl;
248 list.deleteList();
249
250 return 0;
251 }
```