

# Strukture podataka

## Zadaća 3

Tuzla, april 2022.

# Zadatak 1

- Napraviti sortiranu jednostruko linkanu listu. Lista treba da ima default, copy i move konstruktore, te copy i move operatore jednako. Lista treba da sadrži metode add(), find() i remove(). Metodi find() i remove() rade sa iteratorima, tako da je potrebno implementirati i iteratore za listu. Metod add() dodaje element na poziciju tako da lista bude sortirana, metod find() uzima predikat i vraća iterator na element koji zadovoljava predikat funkciju, a ukoliko ni jedan element ne zadovoljava, vraća iterator na kraj (end()). Metod remove() uzima iterator i briše element u listi sa te pozicije. (Obratiti pažnju na granične slučajeve!).

**Napomena:** potrebno je da lista bude generička.

- Napraviti strukturu ToDoTask, koja predstavlja obavezu koju korisnik treba uraditi. ToDoTask se sastoji od id-a, naslova (title), opisa (description) te prioriteta (priority). Implementirati potrebne operatore za dodavanje strukture u prethodno implementiranu sortiranu listu. Prilikom kreiranja objekta ToDoTask, od korisnika tražiti unos naslova, opisa i prioriteta, a za vrijednost id-a iskoristiti sljedeću generator funkciju:

```
int generateId() {
    static int counter = 0;
    return ++counter;
}
```

Program treba da ima ponašanje kao u nastavku:

**Napomena:**

U narednom prikazu postoji greška prilikom brisanja taska iz liste. Ako Task postoji u listi, on se **mora** ukloniti.

```
-> % ./a.out
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****
Your notes is empty
Enter number 0 to exit program, or something else to continue:
2
Choose one of the options
*****
```

```

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 3
*****

Your list is empty
Enter number 0 to exit program, or something else to continue: 3
Choose one of the options
*****

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 2
*****

Enter a new ToDoTask:
Enter the title of the task: 1st task
Enter the description of the task: My first todo task
Enter a priority (>0): 3
Enter number 0 to exit program, or something else to continue: 1
Choose one of the options
*****

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****

*****
* Task *
*****

Title: 1st task
Description: My first todo task
Priority: 3

Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 2
*****

Enter a new ToDoTask:
Enter the title of the task: 2nd task
Enter the description of the task: My second todo task
Enter a priority (>0): 1

```

```

Enter number 0 to exit program, or something else to continue: 1
Choose one of the options
*****

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****

*****
* Task *
*****

Title: 2nd task
Description: My second todo task
Priority: 1
*****

* Task *
*****

Title: 1st task
Description: My first todo task
Priority: 3

Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 2
*****

Enter a new ToDoTask:
Enter the title of the task: 3rd task
Enter the description of the task: My third todo task
Enter a priority (>0): 5
Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****

1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****

*****
* Task *
*****

Title: 2nd task

```

```
Description: My second todo task
Priority: 1
*****
* Task *
*****

Title: 1st task
Description: My first todo task
Priority: 3
*****
* Task *
*****

Title: 3rd task
Description: My third todo task
Priority: 5


Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 2
*****
Enter a new ToDoTask:
Enter the title of the task: 4th task
Enter the description of the task: My fourth todo task
Enter a priority (>0): 4
Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****
*****
* Task *
*****

Title: 2nd task
Description: My second todo task
Priority: 1
*****
* Task *
*****

Title: 1st task
```

```
Description: My first todo task
Priority: 3
*****
* Task *
*****

Title: 4th task
Description: My fourth todo task
Priority: 4
*****
* Task *
*****

Title: 3rd task
Description: My third todo task
Priority: 5

Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 3
*****
*****

Title: 2nd task
Description: My second todo task
Priority: 1
Id: 2

Title: 1st task
Description: My first todo task
Priority: 3
Id: 1

Title: 4th task
Description: My fourth todo task
Priority: 4
Id: 4

Title: 3rd task
Description: My third todo task
Priority: 5
Id: 3

*****
```

```

Enter id of the task which you want to mark as done: 4

Task with id = 4 does not exist
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****
*****
* Task *
*****
Title: 2nd task
Description: My second todo task
Priority: 1
*****
* Task *
*****
Title: 1st task
Description: My first todo task
Priority: 3
*****
* Task *
*****
Title: 4th task
Description: My fourth todo task
Priority: 4
*****
* Task *
*****
Title: 3rd task
Description: My third todo task
Priority: 5

Enter number 0 to exit program, or something else to continue: 3
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 3
*****
*****
Title: 2nd task

```

```
Description: My second todo task
Priority: 1
Id: 2

Title: 1st task
Description: My first todo task
Priority: 3
Id: 1

Title: 4th task
Description: My fourth todo task
Priority: 4
Id: 4

Title: 3rd task
Description: My third todo task
Priority: 5
Id: 3

*****
Enter id of the task which you want to mark as done: 1
Enter number 0 to exit program, or something else to continue: 2
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****

*****
* Task *
*****

Title: 2nd task
Description: My second todo task
Priority: 1
*****

* Task *
*****

Title: 4th task
Description: My fourth todo task
Priority: 4
*****

* Task *
*****

Title: 3rd task
Description: My third todo task
```



Priority: 5

Enter number 0 to exit program, or something else to continue: 3

Choose one of the options

\*\*\*\*\*

1. Display the current list of ToDoTask

2. Enter a new ToDoTask

3. Mark ToDoTask as done

Enter your choice: 3

\*\*\*\*\*

\*\*\*\*\*

Title: 2nd task

Description: My second todo task

Priority: 1

Id: 2

Title: 4th task

Description: My fourth todo task

Priority: 4

Id: 4

Title: 3rd task

Description: My third todo task

Priority: 5

Id: 3

\*\*\*\*\*

Enter id of the task which you want to mark as done: 10

Task with id = 10 does not exist

Choose one of the options

\*\*\*\*\*

1. Display the current list of ToDoTask

2. Enter a new ToDoTask

3. Mark ToDoTask as done

Enter your choice: 3

\*\*\*\*\*

\*\*\*\*\*

Title: 2nd task

Description: My second todo task

Priority: 1

Id: 2

Title: 4th task

Description: My fourth todo task

```
Priority: 4
Id: 4

Title: 3rd task
Description: My third todo task
Priority: 5
Id: 3

*****
Enter id of the task which you want to mark as done: 4

Task with id = 4 does not exist
Choose one of the options
*****
1. Display the current list of ToDoTask
2. Enter a new ToDoTask
3. Mark ToDoTask as done
Enter your choice: 1
*****
*****
* Task *
*****
Title: 2nd task
Description: My second todo task
Priority: 1
*****
* Task *
*****
Title: 4th task
Description: My fourth todo task
Priority: 4
*****
* Task *
*****
Title: 3rd task
Description: My third todo task
Priority: 5

Enter number 0 to exit program, or something else to continue: 0
```

## Zadatak 2

Implementirati dvostruko linkanu listu sa svim potrebnim metodima i konstruktorima potrebnim kako bi testovi unutar `mojaListaTest.cpp` fajlova uspješno prolazili.