Soal Praktikum *Practicum Case* COMP6362 Data Structures	BINUS UNIVERSITY
Teknik Informatika *Computer Science*	**CS-COMP6362-Var03.4**
Periode Berlaku Mulai Semester Genap 2020/2021 ***Valid on*** *Even Semester Year* 2020/2021	**Revisi 00** *Revision 00*

Learning Outcomes
- Demonstrate how to create any learned data structure
- Analyze the usage of data structure in application

Topic
- Session 06 - Double Linked List

Sub Topics
- Pointer of Struct
- Insert in the beginning of Double Linked List
- Insert in the end of Double Linked List
- Insert before or after a given node of Double Linked List
- Delete the first node of Double Linked List
- Delete the last node of Double Linked List
- Delete the a given node, before or after a given node of the Double Linked List

Soal
Case

Learning from her birthday experience, Leslie wants to hold a discussion with all her family members regarding the birthday gift agreement for each member of her extended family. Therefore, she wanted to create a simple program using the implementation of a double linked list that could help her collect the opinions of all her family members and conclude the most votes. Then, Leslie asks you to make the program. As her best friend and as an extraordinary programmer, help Leslie fulfill her hopes.

- The program will always display the opinion of Leslie's family member about birthday gift for Leslie's grandchild which contains some descriptions such as **No**, **Family member's name**, and **Birthday gift**. This list can be empty, or contained a number of polling data.

```
=============================================================
| No.| Family members' name |        Birthday gift          |
=============================================================
|                                                           |
|                    --- no data here ---                   |
|                                                           |
=============================================================
```

- The program consists of 4 menus:

```
1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit
```

- If user chooses **(1.) Add a polling data**, then:
  - users are asked to **choose how to input data**
    whether to add data [1] at the beginning or [2] at the end of the list.

```
>> Input your choice : 1

     1= add before the first data
     2= add after  the last  data
   Input your choice [1...2]:
```

    If user chooses to **add before the first data**, then the data will be added as the **first record**. However, if user chooses to **add after the last data**, data will be added as the **last record**.
  - user are asked to input his/her name and select the birthday gift.
  - After adding data is successful, a message will appear stating the process was successful and this list will be updated according to the selected procedure.

- If user chooses **(2.) Delete a polling data**, then:
  - users are asked to **choose what data will be deleted**
    whether [1] the first data or [2] the last data.

```
>> Input your choice : 2

     1= Remove the first data
     2= Remove the last  data
   Input your choice [1...2]:
```

    If user chooses to **remove the first data**, then data in the first row (first data) will be removed. However, if user chooses to **remove the last data**, then the data in the last row (last data) will be removed.
  - After removing data is successful, a message will appear stating the process was successful and the list will be updated according to the selected procedure.
  - If there is no data on the list, a message will appear stating that there is no data that can be removed.

- If user chooses **(3.) Show the polling result,** then the program will display the polling result.
  - If there is a same number of selected birthday gift
    then give suggestions to add more votes or to remove a votes.
  - If there is no data on the list, a message will appear stating that there is no polling result.

- If user chooses **(4.) Exit,** then the program ends.

Print Screen of Main Menu

```
           --- Determining a birthday gift ---

=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|                                                           |
|                   --- no data here ---                    |
|                                                           |
=============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice :
```

Print Screen of Menu '1' (insert data)

```
           --- Determining a birthday gift ---

=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|                                                           |
|                   --- no data here ---                    |
|                                                           |
=============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 1

     1= add before the first data
     2= add after  the last  data
   Input your choice [1...2]: 1

   Input family members' name: Leslie

     1= Fancy yummy cake      2= Holiday trip      3= Money
   Select the birthday gift [1..3]: 1

   --- successfully add: Leslie's Data ---
```

```
=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Leslie               |  Fancy yummy cake           | <-- head <-- tail
|    |                      |                             |
=============================================================
```

The list is updated

Print Screen of Menu '1' then choose 2 (insert at the end of the list)

```
            --- Determining a birthday gift ---

 ============================================================
 | No.| Family members' name |        Birthday gift        |
 ============================================================
 |    |                      |                             |
 |  1.| Leslie               |  Fancy yummy cake           | <-- head <-- tail
 |    |                      |                             |
 ============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 1

     1= add before the first data
     2= add after  the last  data
   Input your choice [1...2]: 2

   Input family members' name: Elaine

     1= Fancy yummy cake      2= Holiday trip      3= Money
   Select the birthday gift [1..3]: 3

   --- successfully add: Elaine's Data ---
```

```
 ============================================================
 | No.| Family members' name |        Birthday gift        |
 ============================================================
 |    |                      |                             |
 |  1.| Leslie               |  Fancy yummy cake           | <-- head
 |  2.| Elaine               |  Money                      | <-- tail
 |    |                      |                             |
 ============================================================
```

The list is updated

Print Screen of Menu '1' then choose 1 (insert at the beginning of the list)

```
           --- Determining a birthday gift ---

=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Leslie               |  Fancy yummy cake           | <-- head
|  2.| Elaine               |  Money                      | <-- tail
|    |                      |                             |
=============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 1

     1= add before the first data
     2= add after  the last  data
   Input your choice [1...2]: 1

   Input family members' name: Shannon

     1= Fancy yummy cake      2= Holiday trip      3= Money
   Select the birthday gift [1..3]: 1

   --- successfully add: Shannon's Data ---
```

```
=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Shannon              |  Fancy yummy cake           | <-- head
|  2.| Leslie               |  Fancy yummy cake           |
|  3.| Elaine               |  Money                      | <-- tail
|    |                      |                             |
=============================================================
```

The list is updated

Print Screen of Menu '2' then choose 2 (delete the last data)

```
           --- Determining a birthday gift ---

=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Shannon              |  Fancy yummy cake           | <-- head
|  2.| Leslie               |  Fancy yummy cake           |
|  3.| Elaine               |  Money                      | <-- tail
|    |                      |                             |
=============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 2

     1= Remove the first data
     2= Remove the last  data
   Input your choice [1...2]: 2

   --- Elaine's opinion will be removed. ---
```

```
=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Shannon              |  Fancy yummy cake           | <-- head
|  2.| Leslie               |  Fancy yummy cake           | <-- tail
|    |                      |                             |
=============================================================
```

The list is updated

Print Screen of Menu '2' then choose 1 (delete the first data)

```
           --- Determining a birthday gift ---

=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Shannon              |  Fancy yummy cake           | <-- head
|  2.| Leslie               |  Fancy yummy cake           | <-- tail
|    |                      |                             |
=============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 2

     1= Remove the first data
     2= Remove the last  data
   Input your choice [1...2]: 1

   --- Shannon's opinion will be removed. ---
```

```
=============================================================
| No.| Family members' name |        Birthday gift        |
=============================================================
|    |                      |                             |
|  1.| Leslie               |  Fancy yummy cake           | <-- head <-- tail
|    |                      |                             |
=============================================================
```

The list is updated

Print Screen of Menu '2' then choose 1 or 2 and there is no data can be removed

```
           --- Determining a birthday gift ---

 ============================================================
 | No.| Family members' name |        Birthday gift        |
 ============================================================
 |                                                          |
 |                   --- no data here ---                   |
 |                                                          |
 ============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 2

     1= Remove the first data
     2= Remove the last  data
   Input your choice [1...2]: 1

   --- no data can be deleted  ---
```

```
           --- Determining a birthday gift ---

 ============================================================
 | No.| Family members' name |        Birthday gift        |
 ============================================================
 |                                                          |
 |                   --- no data here ---                   |
 |                                                          |
 ============================================================


1. Add a polling data
2. Delete a polling data
3. Show the polling result
4. Exit

>> Input your choice : 2

     1= Remove the first data
     2= Remove the last  data
   Input your choice [1...2]: 2

   --- no data can be deleted  ---
```

Print Screen of Menu '3' when no data in the list

```
>> Input your choice : 3

   --- no data, no polling result  ---
```

Print Screen of Menu '3' when the polling result is shown

```
>> Input your choice : 3

   The polling results so far are
   Fancy yummy cake= 1, Holiday trip= 0, Money= 0

   Based on this polling,
   we will give a fancy yummy cake as a gift on a family member's birthday
```

```
>> Input your choice : 3

   The polling results so far are
   Fancy yummy cake= 2, Holiday trip= 1, Money= 3

   Based on this polling,
   we will give amount of money as a gift on a family member's birthday
```

Print Screen of Menu '3' when there are same number of vote in the list

```
>> Input your choice : 3

   The polling results so far are
   Fancy yummy cake= 1, Holiday trip= 0, Money= 1

   insert or remove a polling data.
```