Soal Praktikum *Practicum Case* COMP6362 Data Structures	BINUS MALANG Institute of Creative Technology
Teknik Informatika *Computer Science*	CS-COMP6362-Var02.1
Periode Berlaku Mulai Semester Genap 2019/2020 ***Valid on*** *Even Semester Year* 2019/2020	**Revisi 00** *Revision 00*

Learning Outcomes
- Analyze the usage of data structure in application
- Design a proper data structure needed in application

Topic
- Session 10 - Graph

Sub Topics
- Directed graph
- Representation of graph

Soal
Case

Make a program that ilustrates **Graph**. Below will describe the requirements.
- Program consists of 3 menus:
  1. Show Adjacency Matrix
  2. Show Degree of all vertices
  3. Exit

- If user chooses **Show Adjacency Matrix**, then:
  - Ask user to input **vertices number**. Validate that **the number** must be **between 1 and 10**.
  - Ask user about **the adjacent data of all vertices**.
  - If all data has been successfully inputted, show the graph representation in Adjacency Matrix form.

- If user chooses **Show Degree of all vertices**, then:
  - Ask user to input **vertices number**. Validate that **the number** must be **between 1 and 10**.
  - Ask user about **the adjacent data of all vertices**.
  - If all data has been successfully inputted, show the in degree, out degree, and total degree of all vertices.

- If user chooses **Exit,** then:
  - Delete all data in the tree.
  - Program ends.

Please run the EXE file to see the sample program.

Print Screen of Main Menu

```
Directed Graph Representation
=============================

1. Show Adjacency Matrix
2. Show Degree of all vertices
3. Exit

>> Input choice:
```

Print Screen of Show Adjacency Matrix (Menu= 1)

```
Directed Graph Representation
=============================

1. Show Adjacency Matrix
2. Show Degree of all vertices
3. Exit

>> Input choice: 1

How Many Vertices ? (max=10) : 3

Vertices 1 & 2 are Adjacent ? (Y/N) :y

Vertices 1 & 3 are Adjacent ? (Y/N) :y

Vertices 2 & 1 are Adjacent ? (Y/N) :n

Vertices 2 & 3 are Adjacent ? (Y/N) :y

Vertices 3 & 1 are Adjacent ? (Y/N) :n

Vertices 3 & 2 are Adjacent ? (Y/N) :n


Adjacency Matrix of this Graph
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Vertex    1  2  3

    1     0  1  1

    2     0  0  1

    3     0  0  0
```

Print Screen of Show Degree of all vertices (Menu=2)

```
Directed Graph Representation
=============================

1. Show Adjacency Matrix
2. Show Degree of all vertices
3. Exit

>> Input choice: 2

How Many Vertices ? (max=10) : 3

Vertices 1 & 2 are Adjacent ? (Y/N) :y

Vertices 1 & 3 are Adjacent ? (Y/N) :y

Vertices 2 & 1 are Adjacent ? (Y/N) :n

Vertices 2 & 3 are Adjacent ? (Y/N) :y

Vertices 3 & 1 are Adjacent ? (Y/N) :n

Vertices 3 & 2 are Adjacent ? (Y/N) :n

 Vertex           In_Degree       Out_Degree       Total_Degree
    1                 0               2               2
    2                 1               1               2
    3                 2               0               2
```