National Taipei University of Technology

Communication Software Design (Fall, 2013)

Project 2

(Due: 2013/11/11, Monday before PM11:59)

The goal of this course in this semester is to complete a “Graphical Modeling System” using Qt C++ programming language features and some supporting source code libraries.

(I) Project Descriptions:

In this second homework, you are asked to implement new functions to enhance the GMS system. The first is delete, which will delete a component you choose. Second, develop a group function, it must be able to add components into a group.

Any useful software, such as Paint or Word, must have redo and undo. In this homework, you need to implement these basic features in the GMS.

Since your program need to save more information, it’s necessary to isolate save and load function. You should make it need not to create an xml before you add components or other operations, and you save or load them any time you want by yourself. Thus, the table in system is no longer corresponding to file during edit. The only moments they related to each other is in Save or Load function, and the file closed after Save / Load finished. This can make the GMS more convenient.

Also, you have to improve the display function to show these new information.

Figure 1 shows the situation of no xml record loaded or created.

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:
--------------------------------------------------------------------------------
     Type      |      ID      |      Name
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

Groups:
--------------------------------------------------------------------------------
   GID      |      Name      |      Member      |
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 3

Select component type
[1]Cube [2]Pyramid [3]Sphere
```

```
> 1

Enter component name
> F Cube

A component of Cube type added, name: F Cube, ID: 1

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:
-------------------------------------------------------------------------
    Type      |     ID      |     Name
-------------------------------------------------------------------------
      C        |     1       |     F Cube
-------------------------------------------------------------------------

Groups:
-------------------------------------------------------------------------
   GID      |     Name      |     Member      |
-------------------------------------------------------------------------
-------------------------------------------------------------------------
```

Figure 1

Delete

When you delete a component, it will not only affect the components list. You should also delete it from group.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 4

Select component to delete
> 13

The component of ID ‘13’ is not exist.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 4

Select component to delete
> 5

The component ‘5’ has been deleted.

Components:
--------------------------------------------------------------------------
    Type      |      ID      |      Name
--------------------------------------------------------------------------
```

```
      C       |     1       |     First Cube
      S       |     2       |     First Sphere
      P       |     3       |     First Pyramid
      P       |     4       |     Second Pyramid
      P       |     6       |     Fourth Pyramid
      C       |     7       |     SC
      C       |     8       |     Third Cube
      S       |     9       |     Second Sphere
      C       |     10      |     Fourth Cube
      S       |     11      |     Third Sphere
      S       |     12      |     FP
--------------------------------------------------------------------------------

Groups:
--------------------------------------------------------------------------------
  GID     |     Name     |     Member     |
--------------------------------------------------------------------------------
    G1     |     gr1       |     1, 12
    G2     |     YUvs      |     2, 7
--------------------------------------------------------------------------------
```

Figure 2

Group

The group function contains create a new group and add components into a group.

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
```

```
> 8

Components:
--------------------------------------------------------------------------------
    Type      |     ID      |     Name
--------------------------------------------------------------------------------
      C       |     1       |     First Cube
      S       |     2       |     First Sphere
      P       |     3       |     First Pyramid
      P       |     4       |     Second Pyramid
      P       |     5       |     Third Pyramid
      P       |     6       |     Fourth Pyramid
      C       |     7       |     SC
      C       |     8       |     Third Cube
      S       |     9       |     Second Sphere
      C       |     10      |     Fourth Cube
      S       |     11      |     Third Sphere
      S       |     12      |     FP
--------------------------------------------------------------------------------

Groups:
--------------------------------------------------------------------------------
   GID      |      Name      |      Member      |
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

Graphical Modeling System
[1]Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 5
```

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 1

Enter group name
> gr1

Enter members
> 1, 5, 13

The component of ID ‘13’ is not exist.

Enter members
> 1, 5, 12

The new group ‘gr1’ has been created, ID: G1, members: 1, 5, 12

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

```
-------------------------------------------------------------------------
   GID      |      Name      |      Member      |
-------------------------------------------------------------------------
     G1      |      gr1         |      1, 5, 12
-------------------------------------------------------------------------

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 2

Enter group ID
> 2

The group of ID ‘2’ is not exist.

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 2

Enter group ID
> 1

Enter components to add
> 1, 13

The component of ID ‘1’ is already contained in the group ‘gr1’, and the
component of ID ‘13’ is not exist.

Enter components to add
> 3, 8 , 11

Components of ID ‘3’ ‘8’ ‘11’ have been added to the group ‘gr1’.

Components:
```

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

GID	Name	Member
G1	gr1	1, 3, 5, 8, 11, 12

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 3

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo

```
[8] Display current table
[9] Back to Welcome menu
>
```

Figure 3

Undo

Undo function will back the system to last step. You should store the step you have done in a list or stack, and check all components and groups to ensure no things changed incorrectly after undo.

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 1

Enter record path
> c:/gms1.xml

Record loaded.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
```

[9] Back to Welcome menu
> 8

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table

```
[9] Back to Welcome menu
> 7

Undo list empty, you cannot undo now.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 3

Select component type
[1]Cube [2]Pyramid [3]Sphere
> 1

Enter component name
> D Cube

A component of Cube type added, name: D Cube, ID: 13

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8
```

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP
C	13	D Cube

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 5

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 1

Enter group name
> DG

Enter members
> 6, 9

The new group ‘DG’ has been created, ID: G3, members: 6, 9

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP
C	13	D Cube

Groups:

GID	Name	Member

```
    G1      |     gr1        |     1, 5, 12
    G2      |     YUvs       |     2, 7
    G3      |     DG         |     6, 9
--------------------------------------------------------------------------------

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 3

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 7

Undo successful.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:
```

```
-------------------------------------------------------------------------------
    Type      |     ID      |     Name
-------------------------------------------------------------------------------
      C       |     1       |     First Cube
      S       |     2       |     First Sphere
      P       |     3       |     First Pyramid
      P       |     4       |     Second Pyramid
      P       |     5       |     Third Pyramid
      P       |     6       |     Fourth Pyramid
      C       |     7       |     SC
      C       |     8       |     Third Cube
      S       |     9       |     Second Sphere
      C       |     10      |     Fourth Cube
      S       |     11      |     Third Sphere
      S       |     12      |     FP
      C       |     13      |     D Cube
-------------------------------------------------------------------------------

Groups:
-------------------------------------------------------------------------------
   GID      |     Name      |     Member      |
-------------------------------------------------------------------------------
    G1      |     gr1       |     1, 5, 12
    G2      |     YUvs      |     2, 7
-------------------------------------------------------------------------------

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 7
```

Undo successful.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

```
--------------------------------------------------------------------------------
```

Figure 4

Redo

Redo function will redo the undid step. You should store the undo step you have done in a list or stack, and check all components and groups to ensure no things changed incorrectly after redo.

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 1

Enter record path
> c:/gms1.xml

Record loaded.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
```

[8] Display current table
[9] Back to Welcome menu
> 8

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo

```
[8] Display current table
[9] Back to Welcome menu
> 6

Redo list empty, you cannot undo now.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 3

Select component type
[1]Cube [2]Pyramid [3]Sphere
> 1

Enter component name
> D Cube

A component of Cube type added, name: D Cube, ID: 13

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8
```

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP
C	13	D Cube

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu

```
> 5

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 1

Enter group name
> DG

Enter members
> 6, 9

The new group 'DG' has been created, ID: G3, members: 6, 9

Components:
--------------------------------------------------------------------------------
    Type     |     ID     |     Name
--------------------------------------------------------------------------------
      C      |     1      |     First Cube
      S      |     2      |     First Sphere
      P      |     3      |     First Pyramid
      P      |     4      |     Second Pyramid
      P      |     5      |     Third Pyramid
      P      |     6      |     Fourth Pyramid
      C      |     7      |     SC
      C      |     8      |     Third Cube
      S      |     9      |     Second Sphere
      C      |     10     |     Fourth Cube
      S      |     11     |     Third Sphere
      S      |     12     |     FP
      C      |     13     |     D Cube
--------------------------------------------------------------------------------

Groups:
--------------------------------------------------------------------------------
   GID     |     Name     |     Member     |
```

```
--------------------------------------------------------------------------------
    G1      |      gr1          |      1, 5, 12
    G2      |      YUvs         |       2, 7
    G3      |      DG           |      6, 9
--------------------------------------------------------------------------------

Group
[1] Create group
[2] Add member to a group
[3] Exit
> 3

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 7

Undo successful.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8
```

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP
C	13	D Cube

Groups:

GID	Name	Member
G1	gr1	1, 5, 12
G2	YUvs	2, 7

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 7

Undo successful.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:

Type	ID	Name
C	1	First Cube
S	2	First Sphere
P	3	First Pyramid
P	4	Second Pyramid
P	5	Third Pyramid
P	6	Fourth Pyramid
C	7	SC
C	8	Third Cube
S	9	Second Sphere
C	10	Fourth Cube
S	11	Third Sphere
S	12	FP

Groups:

GID	Name	Member
G1	gr1	1, 5, 12

```
    G2      |      YUvs       |      2, 7
-------------------------------------------------------------------------

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 6

Redo successful.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:
-------------------------------------------------------------------------
    Type      |      ID      |      Name
-------------------------------------------------------------------------
      C       |      1       |      First Cube
      S       |      2       |      First Sphere
      P       |      3       |      First Pyramid
      P       |      4       |      Second Pyramid
      P       |      5       |      Third Pyramid
```

```
      P        |     6       |     Fourth Pyramid
      C        |     7       |     SC
      C        |     8       |     Third Cube
      S        |     9       |     Second Sphere
      C        |     10      |     Fourth Cube
      S        |     11      |     Third Sphere
      S        |     12      |     FP
      C        |     13      |     D Cube
-------------------------------------------------------------------------

Groups:
-------------------------------------------------------------------------
   GID     |     Name     |     Member     |
-------------------------------------------------------------------------
    G1     |     gr1      |     1, 5, 12
    G2     |     YUvs     |     2, 7
-------------------------------------------------------------------------

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 6

Redo successful.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
```

```
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:
--------------------------------------------------------------------------
    Type     |     ID     |     Name
--------------------------------------------------------------------------
      C      |     1      |     First Cube
      S      |     2      |     First Sphere
      P      |     3      |     First Pyramid
      P      |     4      |     Second Pyramid
      P      |     5      |     Third Pyramid
      P      |     6      |     Fourth Pyramid
      C      |     7      |     SC
      C      |     8      |     Third Cube
      S      |     9      |     Second Sphere
      C      |     10     |     Fourth Cube
      S      |     11     |     Third Sphere
      S      |     12     |     FP
      C      |     13     |     D Cube
--------------------------------------------------------------------------

Groups:
--------------------------------------------------------------------------
   GID     |     Name     |     Member     |
--------------------------------------------------------------------------
    G1     |     gr1      |     1, 5, 12
    G2     |     YUvs     |     2, 7
    G3     |     DG       |     6, 9
--------------------------------------------------------------------------
```

Figure 5

Save

The save function saves record to exist or not exist file If the file is not exist, it has to create a new one and save current table.

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 8

Components:
-------------------------------------------------------------------------
    Type     |     ID     |     Name
-------------------------------------------------------------------------
      C      |     1      |     First Cube
      S      |     2      |     First Sphere
      P      |     3      |     First Pyramid
      P      |     4      |     Second Pyramid
      P      |     5      |     Third Pyramid
      P      |     6      |     Fourth Pyramid
      C      |     7      |     SC
      C      |     8      |     Third Cube
      S      |     9      |     Second Sphere
      C      |     10     |     Fourth Cube
      S      |     11     |     Third Sphere
      S      |     12     |     FP
      C      |     13     |     D Cube
-------------------------------------------------------------------------

Groups:
-------------------------------------------------------------------------
  GID     |     Name     |     Member     |
-------------------------------------------------------------------------
```

```
    G1      |     gr1         |     1, 5, 12
    G2      |     YUvs        |     2, 7
    G3      |     DG          |     6, 9
--------------------------------------------------------------------------------

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 2

Enter path
> NULL:\CSD\save1.xml

Cannot create file, select other path to save.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 2

Enter path
> C:\CSD\save1.xml

Record saved.
```

Figure 1

Load

```
Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 1

Enter record path
> c:/gms2.xml

Record of this path and name not exist, please select another path or
record name.

Graphical Modeling System
[1] Load a XML record
[2] Save a XML record
[3] Add component
[4] Delete
[5] Group
[6] Redo
[7] Undo
[8] Display current table
[9] Back to Welcome menu
> 1

Enter record path
> c:/gms1.xml
```

Record loaded.

Figure 6

The following is XML record sample.

```
<GMS>
        <Components>
                <Node>
                        <ID>1</ID>
                        <Name>Cu-1</Name>
                        <Type>Cube</Type>
                </Node>
                <Node>
                        <ID>2</ID>
                        <Name>Py-1</Name>
                        <Type>Pyramid</Type>
                </Node>
                <Node>
                        <ID>3</ID>
                        <Name>Py-2</Name>
                        <Type>Pyramid</Type>
                </Node>
        </Components>
        <Group>
                <Node>
                        <ID>1<ID>
                        <Name>gr1</Name>
                        <Member>1, 3</ Member >
                <Node>
        </Group>
</GMS>
```

Figure 7

(II) Homework Report:

You have to write a report for this homework that should include the following items:

(1) The features that you finished in this homework.
(2) Write comment for each function. (Just be concise.)
(3) Snapshots of program execution.
(4) Measure the time that you spent in this homework. Please record the time
precisely in the following table.

homework#1(total: 18 hours)			
Date	Start	Stop	Comment
20131001	19:30	22:00	New / Load a XML record
20131002	19:00	21:45	Display current components
20131004	13:10	15:25	New / Load a XML record
20131007	14:55	17:30	Add component

Total hours: 10

(III) Homework Grading:

(1) GMS (80%)
Graphical Modeling System
[1] Load a XML record (5%)
[2] Save a XML record (5%)
[3] Add component (3%)
[4] Delete (15%)
[5] Group (15%)
[6] Redo (15%)
[7] Undo (15%)
[8] Display current table (5%)
[9] Back to Welcome menu (2%)
(2) Exit (5%)
(3) Coding style and code quality (10%)
(4) Report (5%)

You should avoid use QT function due to this course's object is to teach

you C++, not QT. If it is necessary to use QT function (Ex. Qt GUI program will need to use QT function), just do it.

(IV) Homework Submission:

Please zip your homework before upload to e-learning.
And you must include:
(1) Your source code (the entire project)
(2) Report (both word and PDF)

If you failed to finish and upload your homework before limit, submit it to my email. There will be a discount for late work, and no score for late work after three days.

TA's email: t8820310@ntut.org.tw