


ESW聯盟「嵌入式系統與軟體工程」

數位相框實作練習

課程：嵌入式系統與軟體工程

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本實驗重點

- 以簡易數位相框為例進行設計
- 練習利用StarUML設計數位相框

實驗器材

- PC x 1
 - 具RS232及USB通訊埠
 - 已安裝Windows XP、VMWare、Red Hat9
 - 已設置QT開發環境
 - 作為Embedded Linux的開發端

- 長高科技 DMA-2440嵌入式開發板
 - 作為Embedded Linux的目標板

實驗軟體及所需檔案

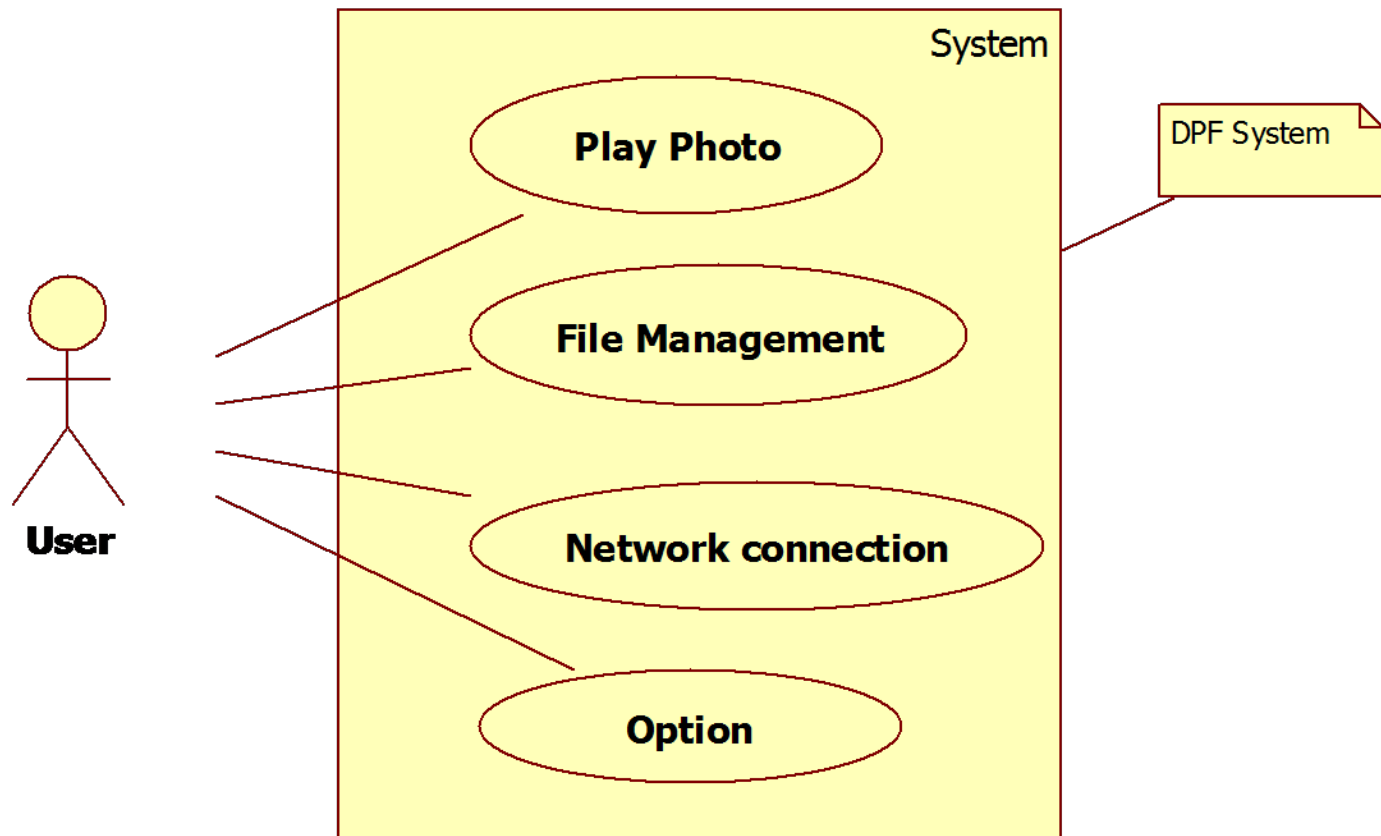
- Windows XP
- VMware-workstation-6.0.3-80004
- Linux – Red Hat 9
- QT
- StarUML

實驗內容

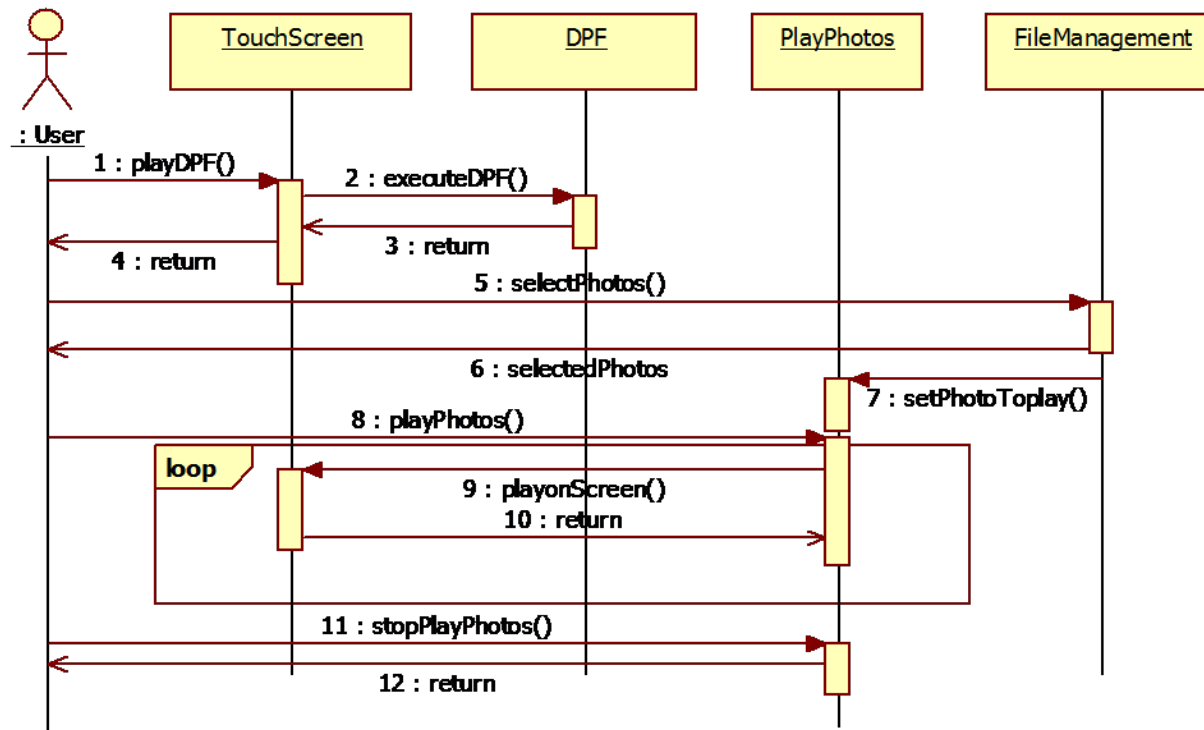
- 4-1-1. 利用StarUML設計數位相框
- 4-1-2. 數位相框程式說明
- 4-1-3. 數位相框燒錄練習

4-1-1. 利用 StarUML 設計數位相框

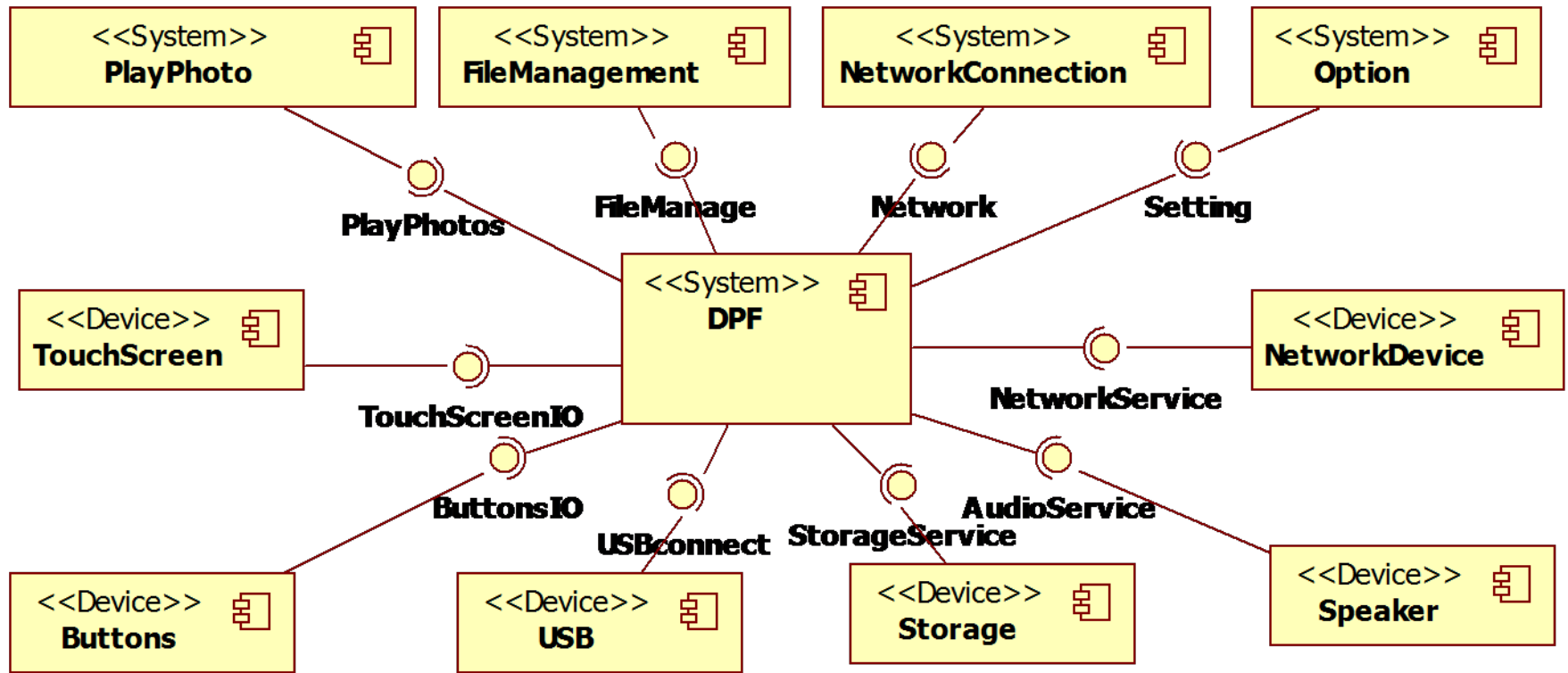
- Use Case Diagram



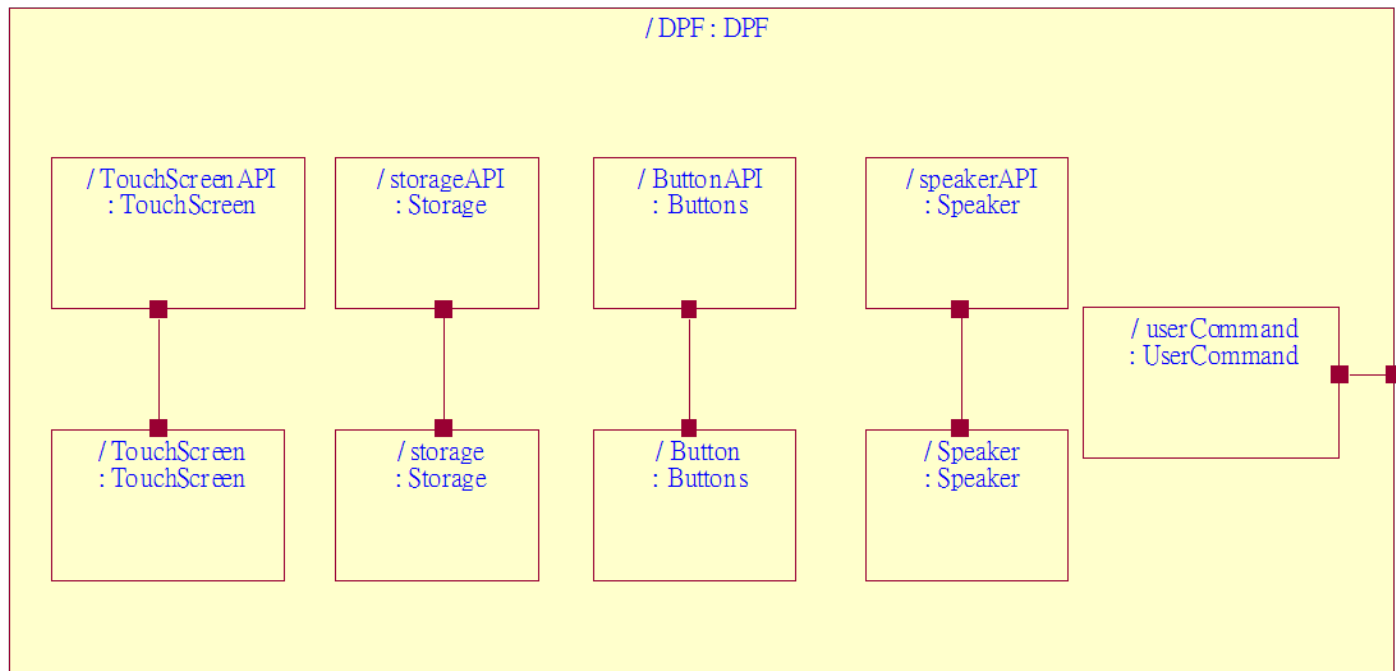
• Sequence Diagram



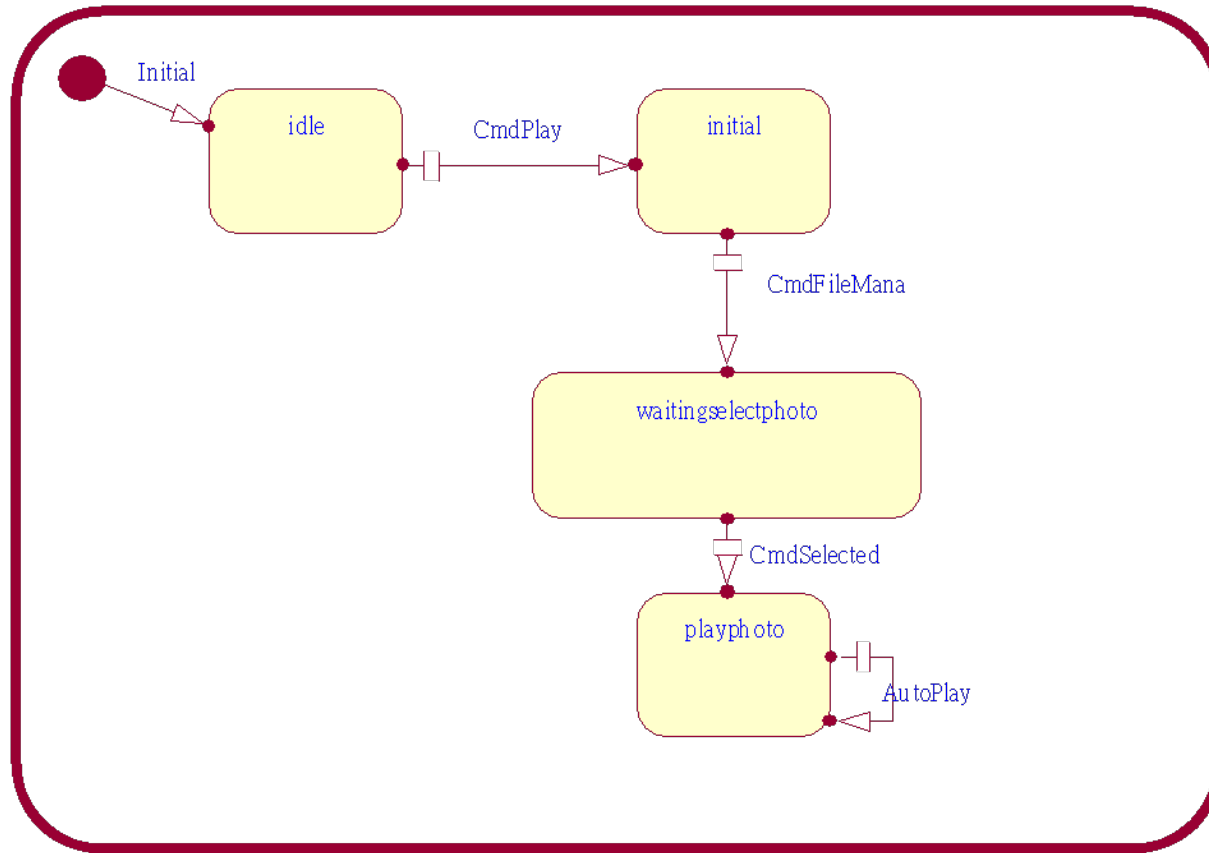
• Component Diagram



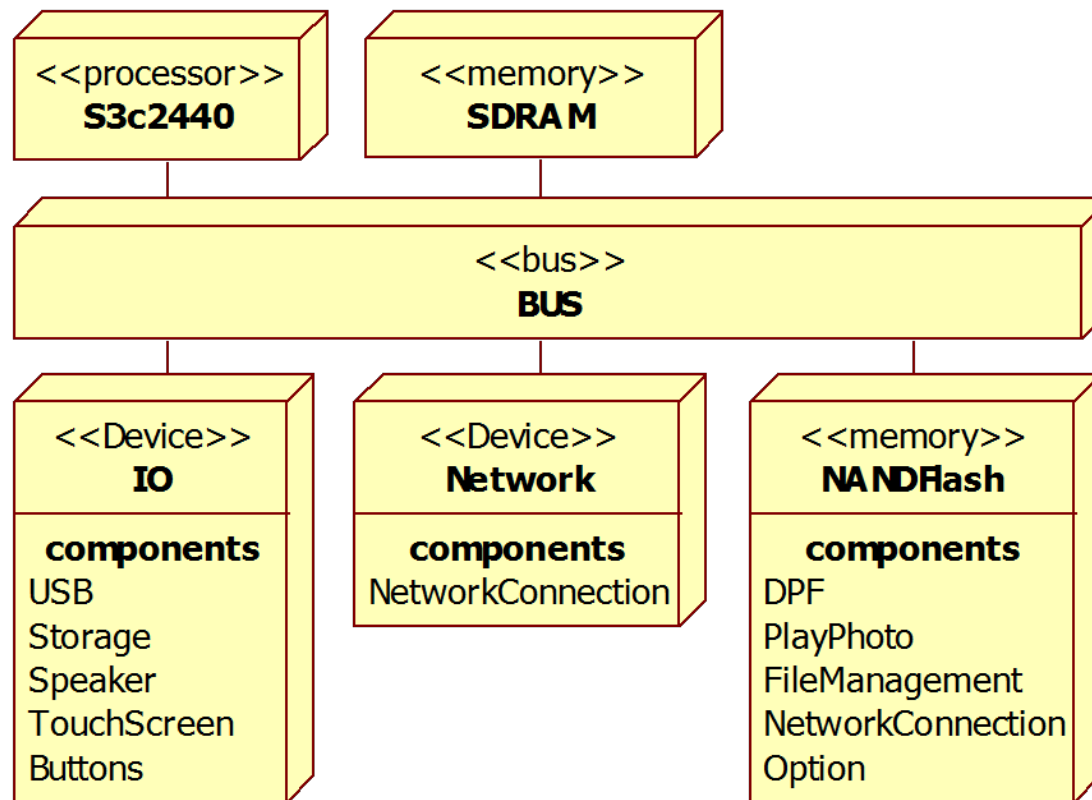
- Capsule Collaboration diagram



- Statechart Diagram



- Deployment Diagram for mapping model



4-1-2. 數位相框程式說明

- main.cpp
- dialog.h
- dialog.cpp

main.cpp

```
#include <qapplication.h>
```

```
#include "dialog.h"
```

```
int main( int argc, char ** argv)
{
    QApplication app( argc, argv);
    ShowJpeg showJpeg;
    app.setMainWidget( &showJpeg );
    showJpeg.show();
    return app.exec();
}
```

dialog.h

```
#ifndef DIALOG_H
#define DIALOG_H
class QTimer;
class QPushButton;
```

```
#include <qwidget.h>
#include <qlabel.h>
```

```
class ShowJpeg : public QWidget
{
    Q_OBJECT
public:
    ShowJpeg( QWidget *parent=0, const char *name=0 );
    QPushButton* pushButton1;
    QPushButton* pushButton2;
    QPushButton* pushButton3;
    QPushButton* pushButton4;
```

protected slots:

```
void update();  
void timerstop();  
void forward();  
void backward();  
void timerlink();
```

private:

```
QTimer *autoShowTimer;  
/*QWidget *widgetJpeg;*/  
QLabel *l;  
int count;  
};
```

dialog.cpp

```
ShowJpeg :: ShowJpeg( QWidget *parent, const char *name )
    : QWidget( parent, name )
{
    QPixmap pm;
    setMinimumSize(QSize(472,230));
    setMaximumSize(QSize(472,230));
    l=new QLabel( this,"label");

    autoShowTimer = new QTimer(this,"show handler");

    pushButton1 = new QPushButton( this, "pushButton1" );
    pushButton1->setGeometry( QRect( 118, 190, 118, 40 ) );
    connect( pushButton1, SIGNAL(clicked()), this, SLOT(forward()) );
    ...
    pushButton1-> setText(tr(">"));
    ...
```

```
void ShowJpeg :: forward()
{
    count ++;
    if(count>=0006)
        count=0000;
    QString str;
    str = "jpegfile" + str.setNum(count) + ".jpg";
    cout<<str<<endl;
    QPixmap pixmap;

    pixmap.load(str);
    l->setGeometry(QRect(0,0,472,190));
    l->setPixmap(pixmap);
    l->setAlignment(AlignCenter);
    l->setScaledContents(TRUE);
}
```

```
void ShowJpeg :: timerlink()
{
    connect( autoShowTimer, SIGNAL(timeout()), this,SLOT(update()) );
    autoShowTimer->start(2000);
}
```

```
void ShowJpeg :: timerstop()
{
    autoShowTimer->stop();
}
```

4-1-3. 數位相框燒錄練習

- 1.編譯成目標板上可用的程式
- 2.將dialog的執行檔、.desktop檔及圖檔加入至rootfile中
- 3.更新目標板上的rootfile