Ncode SDK

Specification Version 1.10

NeoLAB Convergence Inc.

Revision History

Ver	Date	Contents
1.00	16-Dec, 16	New document
1.10	30-May, 17	Ncoded PDF sample code (Datalogics Adobe PDF library)

Contents

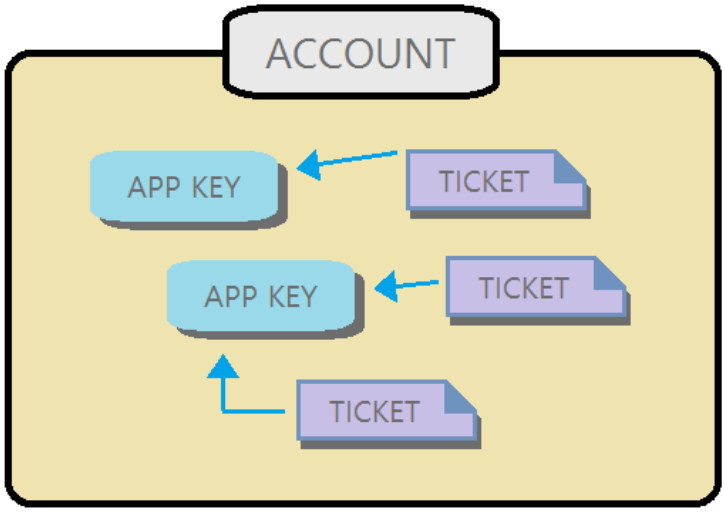
1. About this document

This document is for programming user. This document explains Ncode functions and how to use sample source code.

2. Base concept to Know before getting started

1) Simple process of neoLAB cloud API service

1-1) Create account
1-2) Buy tickets
1-3) Create app key
1-4) Exercise sample app
1-5) Test your app key and tickets



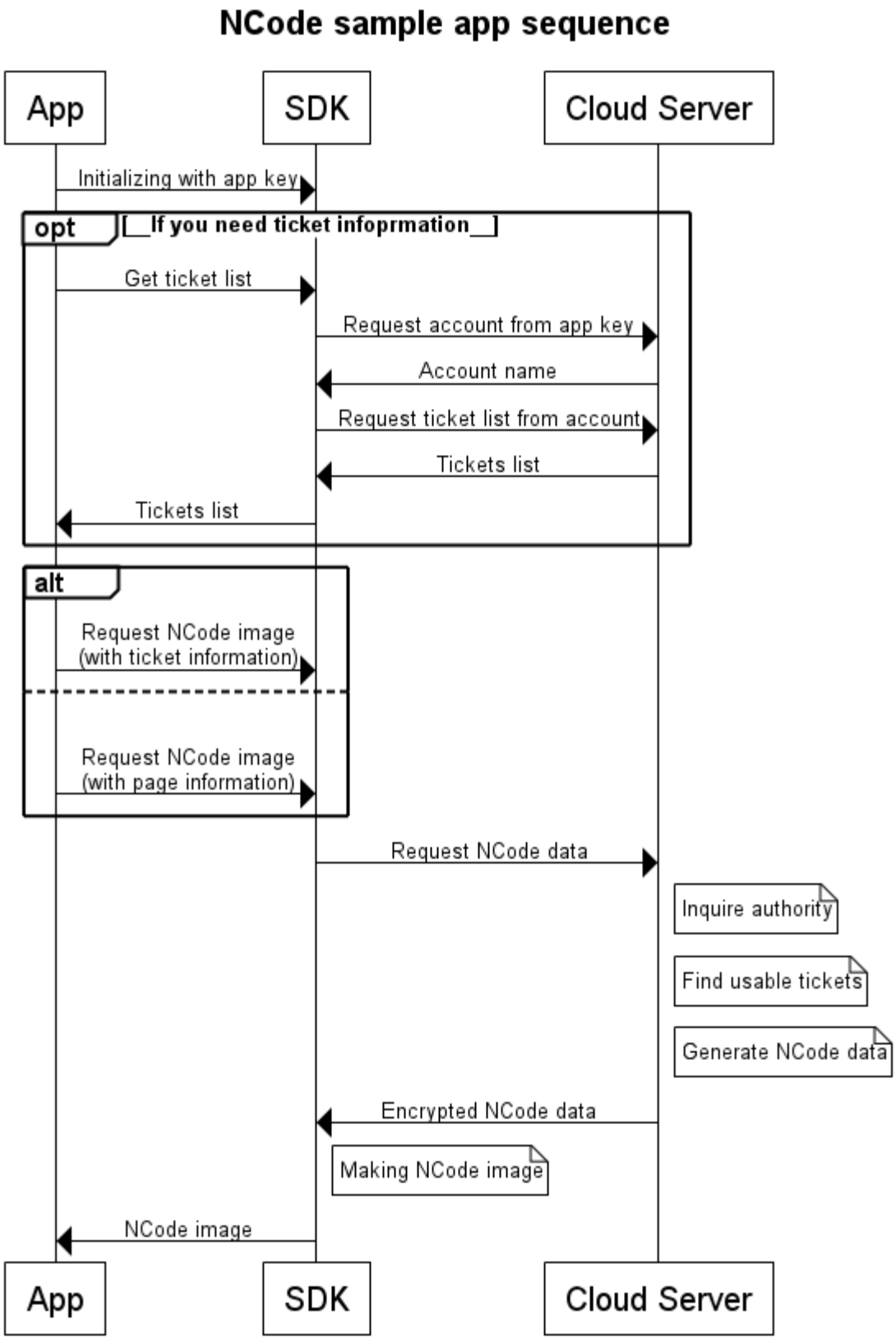
2) Important keywords

- Ncode - NeoLAB convergence short line code
- Account - Account has tickets and app keys
- Ticket - A type of certificates that have a range of purchased Ncode
- App key - Unique identification code for printing Ncode in application.

3. Preface

Please prepare C# development environment. We recommend Microsoft Visual Studio series.

4. How it works



5. Add reference

NeoLABNcodeSDK.dll

6. Class summary

CNcodeSDK class	
This class contains everything about the Ncode SDK's overall processing. Inquiring tickets, Ncode generating and other utility functions.	
bool **Init**(string appKey)	Initialize with app key **Parameters :** appKey - application key **Returns :** If app key is successfully set, return true.
int **GetTickets**(out TicketInfo[] tickets)	Return ticket list from account of app key **Parameters :** tickets - TicketInfo array to recieve ticket list **Returns :** Throw error codes 100 - not initialized with app key 101 - request cloud server for app key API error 102 - request cloud server for ticket API error 103 - account has no ticket
TicketInfo **SetStartPageByOffset**(TicketInfo startPage, int bookOffset, int pageOffset)	Sets the page information to be made based on the selected ticket **Parameters :** startPage - base ticket bookOffset - spacing book value from base value pageOffset - spacing page value from base value **Returns :** Result TicketInfo applied with offset value

Size **GetImageSizeFromPaperSize** (String paper, int dpi, bool isLandscape = false)	Get image size(width, height) from paper size name like "A4", "Letter"... **Parameters :** Paper - paper size name dpi - dots per inch for calculate image size isLandscape - if value is true, landscape shape. else portrait **Returns :** Calculated image width and height pixel value
NcodeData **GenerateNcode**(TicketInfo pageInfo, int width, int height, int dpi, bool isBold)	Request Ncode image. **Parameters :** pageInfo - page information to create Ncode image width - width of Ncode image to create height - height of Ncode image to create dpi - dots per inch for create Ncode image isBold - weather to print bold code or normal code **Returns :** NcodeData class include Ncode image or error code. The following is error code list. NcodeData.errorCode(340) - not initialized with app key NcodeData.errorCode(330) - page information is out of range of selected section NcodeData.errorCode(350) - requested image size is out of range of selected section NcodeData.errorCode(320) - unknown error, please contact administrator NcodeData.errorCode(other error code) - error code from neoLAB cloud server. Check GetLastError() function
NcodeData **GenerateNcode**(int section, int owner, int book, int page, int width, int height, int dpi, bool isBold)	Request Ncode image. **Parameters :** section - section number to create owner - owner number to create book - book number to create page - page number to create width - width of Ncode image to create height - height of Ncode image to create dpi - dots per inch for create Ncode image isBold - weather to print bold code or normal code **Returns :** NcodeData class include Ncode image or error code. The following is error code list. NcodeData.errorCode(340) - not initialized with app key

	NcodeData.errorCode(330) - page information is out of range of selected section NcodeData.errorCode(350) - requested image size is out of range of selected section NcodeData.errorCode(320) - unknown error, please contact administrator NcodeData.errorCode(other error code) - error code from neoLAB cloud server. Check GetLastError() function
string **GetLastError**()	Get last error message, if an error occurs. **Returns :** Error message string
string **GetVersion**()	Get current version of Ncode SDK **Returns :** Current version of SDK string

class **Ticketinfo** definition	public class TicketInfo
	{
	public string account;
	public int bookSize;
	public int bookStart;
	public string extraInfo;
	public int owner;
	public int pageLeft;
	public int pageSize;
	public int pageStart;
	public int period;
	public int section;
	public int state;
	public int type;
	public TicketInfo();
	}

class **NcodeData** definition	public class NcodeData
	{
	public int book;
	public int errorCode;
	public Bitmap image;
	public int imgHeight;
	public int imgWidth;
	public int owner;
	public int page;
	public int section;
	public NcodeData();
	}

7. Sample application processing

1) Declare Ncode SDK class.

```
CNcodeSDK sdk = new CNcodeSDK();
```

2) Initialize with app key.

```
sdk.Init("855422da920c239d49beb455d46364f5cb485cda83a9f6");
```

3) Get tickets from pre-set app key.

```
CNcodeSDK.TicketInfo[] tickets;

int getTicketRet = sdk.GetTickets(out tickets);
```

4) Set the page you want. (If you want the first page of first book, you can skip it.)

```
CNcodeSDK.TicketInfo pageInfo =

sdk.SetStartPageByOffset(tickets[0], +2, +15);
```

5) Get Ncoded bitmap image.

```
CNcodeSDK.NcodeData codeData = sdk.GenerateNcode(
        pageInfo,    // page information from tickets
        2100,        // width (pixel)
        3000,        // height (pixel)
        600,         // dpi (600 or 1200)
        false);      // is bold
```

5-b) If you know the code range information, you can enter it yourself. Enter section, owner, book and page number instead TicketInfo.

6) Save bitmap image file.

```
codeData.image.Save(outputFilename);
```

8. Caution

The code might not print properly if you directly print the bitmap image that was received with the return value.

In order for the smartpen to correctly recognize Ncode, you should print the pixels as they are without distorting the original. Typically, the printer dithers itself on output to make it easier to see with the naked eye. Because of this, the code is not kept as it is, and the smartpen will not recognize it.

The important thing is that **you have to use the means to print Ncode as it is.**

In addition, even if it can print the original as it is, **a color laser printer has been recommended** because the case of the inkjet printer smearing.

There are a few things you need to know to get the correct output.

1) Output through Adobe pdf

The Adobe reader has the ability to print the pdf file as it is.

Therefore, if Ncode layer is added to pdf by using pdf library and then printed, Ncode can be output without distortion.

However, when printing, **Ncode must be printed in carbon black color** (corresponding to K in CMYK color of printer), and **background other than Ncode should not contain carbon black.**

This is because the NeoLAB smartpen recognizes only the carbon black color and identifies Ncode. Please take a look at the following parts to help you understand.

2) CMYK and CMYKK '

When printing, four colors of CMYK or five colors of CMYKK 'can be used as the color space.

If you use CMYK, you must use K for Ncode, so if you have a background, you should represent the background color with only CMY color combinations. There is an issue that the background color must be corrected. If you only output Ncode without background, there is no problem.

Therefore, the use of CMYKK '(using non-carbon black) is a good way to get better quality. This is because Ncode can be identified using non-carbon black without modifying the background color.

You need to use a professional printing shop for using CMYKK' color space.

9. Generating Ncoded PDF sample

1) Sample code for creating Ncoded PDF has been added.

The sample code has the following process:

1-1) Create Ncode image with Request_and_GenerateNcode () function,

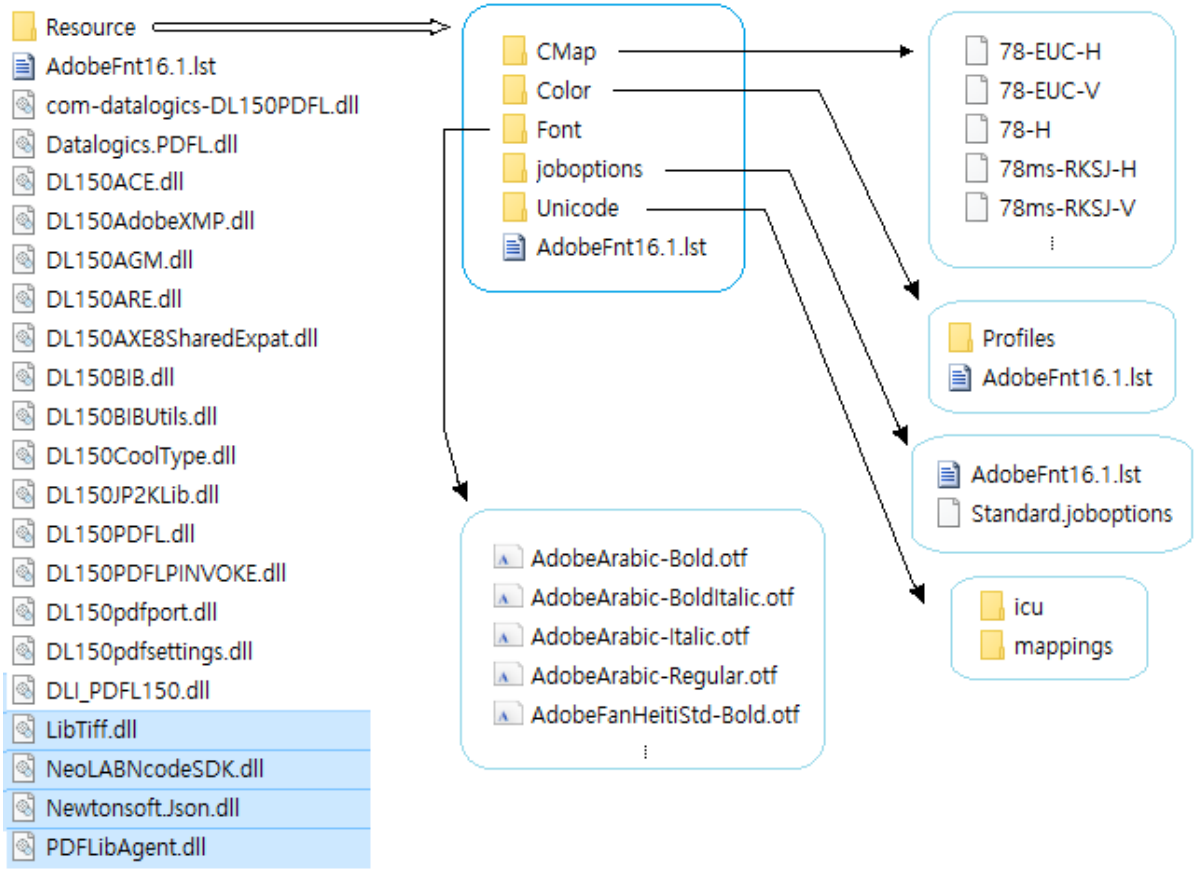
1-2) Create Ncode PDF file by combining image and PDF file generated by RemoveK_and_AddNcode () function.

2) Development environment settings

The C# PDF sample code that we provide is using the Adobe PDF Library provided by Datalogics (http://www.datalogics.com/products/pdf/pdflibrary/). Also, it can guarantee operation only in 64bit environment.

3) Additional files list and placement

You should place the Adobe PDF Library in Datalogics as follows, based on the location of the executable file.(Please refer to attached picture.) If you don't have it, you can purchase it to use.
Files marked in blue are provided with sample code and include open library.



4) Add reference

NeoLABNcodeSDK.dll
Newtonsoft.Json.dll
PDFLibAgent.dll