ZKFinger Reader SDK Development Guide C#

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ZKFinger Reader SDK Development Guide

Release History

Date	Version	Remarks
May 21, 2016	1.0	Basic version

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1 Overview

Thank you for using ZKFinger Reader SDK. Please read this document carefully before use to fast learn how to use ZKFinger Reader SDK.

2 Privacy Policy

You are authorized to use the software but you must make the following commitment to ZKTeco: You shall not use, copy, modify, lease, or transfer any part of the SDK beyond the clauses of this document.

3 System Requirements

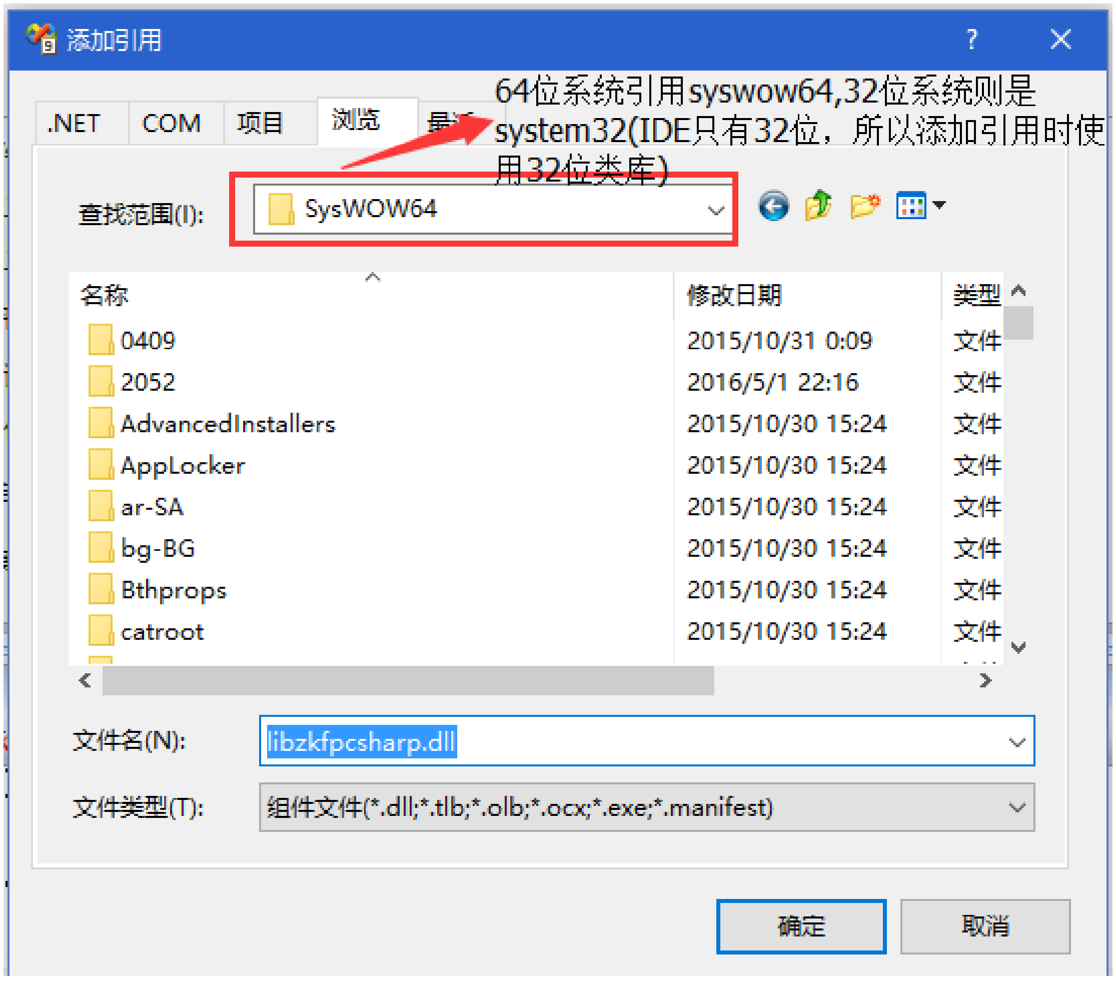
1) Operating system: Windows XP or a later version, .net framework 3.5
2) Applicable development language: C#

4 Installation and Deployment

1) Installation: Install ZKFinger SDK 5.x/ZKOnline SDK 5.x.

5 Description of SDK Interfaces

5.1 Referenced Class Library


添加引用
.NET
COM
项目
浏览
最近
64位系统引用syswow64,32位系统则是system32(IDE只有32位，所以添加引用时使用32位类库)
查找范围(I):
SysWOW64
名称
修改日期
类型
文件名(N):
libzkfpcsharp.dll
文件类型(T):
组件文件(*.dll;*.tlb;*.olb;*.ocx;*.exe;*.manifest)
确定
取消

名称	修改日期	类型
0409	2015/10/31 0:09	文件
2052	2016/5/1 22:16	文件
AdvancedInstallers	2015/10/30 15:24	文件
AppLocker	2015/10/30 15:24	文件
ar-SA	2015/10/30 15:24	文件
bg-BG	2015/10/30 15:24	文件
Bthprops	2015/10/30 15:24	文件
catroot	2015/10/30 15:24	文件

5.2 Description of the Class Library

- **Dynamic library**
  Libzkfpcsharp.dll(system32/syswow64)
- **Namespace**
  libzkfpcsharp
- **Class name**
  Zkfp

5.3 Member Variables

Member variables can be acquired after OpenDevice is executed successfully.

- **imageWidth**
  Width of a fingerprint image
- **imageHeight**
  Height of a fingerprint image
- **devSn**
  Device SN (unique identifier of the device)

5.4 Interface Description

5.4.1 Initialize

[Function]

```
public int Initialize()
```

[Purpose]

This function is used to initialize the device.

[Parameter Description]

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.2 Finalize

[Function]

```
public int Finalize()
```

[Purpose]

This function is used to release library resources.

[Parameter Description]

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.3 GetDeviceCount

[Function]

```
public int GetDeviceCount()
```

[Purpose]

This function is used to acquire the number of collected devices.

[Parameter Description]

[Return Value]

Device count

5.4.4 OpenDevice

[Function]

public int OpenDevice(int index)

[Purpose]

This function is used to connect to a device.

[Parameter Description]

Index:

Device index (The values ranges from 0 to *n* and *n* indicates the device count minus 1.)

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.5 CloseDevice

[Function]

public int CloseDevice()

[Purpose]

This function is used to shut down a device.

[Parameter Description]

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.6 AcquireFingerprint

[Function]

public int AcquireFingerprint(byte[] imgBuffer, byte[] template, ref int size)

[Purpose]

This function is used to capture a fingerprint image.

[Parameter Description]

imgBuffer

Returned image (The array size is imageWidth*imageHeight.)

template

Returned fingerprint template (It is recommended that 2048 bytes be pre-allocated.)

size[in/out]

[in]	Template array length
[out]	Fingerprint template length that is actually returned

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.7 GenerateRegTemplate

[Function]

public int GenerateRegTemplate(byte[] temp1, byte[] temp2, byte[] temp3, byte[] regTemp, ref int regTempLen)

[Purpose]

This function is used to combine three pre-registered fingerprint templates as one registered fingerprint template.

[Parameter Description]

temp1

Pre-registered fingerprint template 1

temp2

Pre-registered fingerprint template 2

temp3

Pre-registered fingerprint template 3

regTemp

Returned registered template

regTempLen[in/out]

[in]	regTemp array length
[out]	Fingerprint template length that is actually returned

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.8 AddRegTemplate

[Function]

public int AddRegTemplate(int fid, byte[] regTemp)

[Purpose]

This function is used to add a registered template to the memory.

[Parameter Description]

fid

Fingerprint ID (The fingerprint ID is returned after 1:N comparison is successfully conducted.)

regTemp

Registered template

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.9 DelRegTemplate

[Function]

public int DelRegTemplate (int fid)

[Purpose]

This function is used to delete a registered fingerprint template from the memory.

[Parameter Description]

fid

Fingerprint ID (The fingerprint ID is returned after 1:N comparison is successfully conducted.)

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.10 Clear

[Function]

public int Clear()

[Purpose]

This function is used to clear all fingerprint templates in the memory.

[Parameter Description]

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.11 Identify

[Function]

public int Identify(byte[] temp, ref int fid, ref int score)

[Purpose]

This function is used to conduct 1:N comparison.

[Parameter Description]

temp

Template used for comparison

fid

Returned fingerprint ID

score

Returned comparison score

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

5.4.12 VerifyByID

[Function]

public int VerifyByID(int fid, byte[] temp)

[Purpose]

This function is used to conduct 1:1 comparison based on the fingerprint ID.

[Parameter Description]

fid

Returned fingerprint ID

temp

Template used for comparison

[Return Value]

>=0	Comparison score
Others	Failed (See the error code description.)

5.4.13 Match

[Function]

public int Match(byte[] temp1, byte[] temp2)

[Purpose]

This function is used to conduct 1:1 comparison on two fingerprint templates.

[Parameter Description]

temp1

Template 1 used for comparison

temp2

Template 2 used for comparison

[Return Value]

>=0	Comparison score
Others	Failed (See the error code description.)

5.4.14 Blob2Base64String

[Function]

static public int Blob2Base64String(byte[] buf, int len, ref String strBase64)

[Purpose]

This function is used to convert a byte[] array into a Base64 string.

[Parameter Description]

buf

BLOB data

len

Length

strBase64

Returned Base64 string

[Return Value]

String length

5.4.15 Base64String2Blob

[Function]

`static public byte[] Base64String2Blob(String strBase64)`

[Purpose]

This function is used to convert a Base64 string into a byte[] array.

[Parameter Description]

strBase64

Base64 string

[Return Value]

Byte[] array

5.4.16 ByteArray2Int

[Function]

`static public boolean ByteArray2Int(byte[] buf, ref int value)`

[Purpose]

This function is used to convert a 4-byte array into an integer.

[Parameter Description]

buf

Byte array

value

Returned data

[Return Value]

true	Succeeded
false	Failed

5.4.17 Int2ByteArray

[Function]

`static public boolean Int2ByteArray(int value, byte[] buf)`

[Purpose]

This function is used to convert an integer into a 4-byte array.

[Parameter Description]

value

Data

buf

Byte array

[Return Value]

true	Succeeded
false	Failed

5.4.18 ExtractFromImage

[Function]

public int ExtractFromImage(String FileName, int DPI, byte[] template, ref int size)

[Purpose]

This function is used to extract a template from a BMP or JPG file.

[Parameter Description]

FileName

Full path of a file

DPI

Image DPI

template

Returned fingerprint template (It is recommended that 2048 bytes be pre-allocated.)

size[in/out]

[in]	Template array length
[out]	Fingerprint template length that is actually returned

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

[Note]

Only the SDK of the standard version supports this function.

5.4.19 SetParameters

[Function]

public int SetParameters(int code, byte[] pramValue, int size

[Purpose]

This function is used to set a parameter.

[Parameter Description]

code

Parameter code (See the Appendixes.)

pramValue

Parameter value

size

Parameter data length

[Return Value]

0	Succeeded

Others Failed (See the error code description.)

5.4.20 GetParameters

[Function]

)public int GetParameters(int code, byte[] paramValue, ref int size)

[Purpose]

This function is used to acquire a parameter.

[Parameter Description]

code

Parameter code (See the Appendixes.)

pramValue

Parameter value

size

Returned parameter data length

[Return Value]

0	Succeeded
Others	Failed (See the error code description.)

6 Appendixes

6.1 Parameter Codes

Parameter Code	Property	Data Type	Description
1	Read-only	Int	Image width
2	Read-only	Int	Image height
3	Read-write (supported only by the LIVEID20R currently)	Int	Image DPI (750/1000 is recommended for children.)
106	Read-only	Int	Image data size
1015	Read-only	4-byte array	VID&PID (The former two bytes indicate VID and the latter two bytes indicate PID.)
2002	Read-write (supported only by the LIVEID20R currently)	Int	Anti-fake function (1: enable; 0: disable)
2004	Read-only	Int	A fingerprint image is true if the lower five bits are all 1's (value&31==31).

Parameter Code	Property	Data Type	Description
1101	Read-only	String	Vendor information
1102	Read-only	String	Product name
1103	Read-only	String	Device SN
101	Write-only (Devices except the LIVE20R need to call a function to disable the parameter.)	Int	1 indicates that the white light blinks; 0 indicates that the parameter is disabled.
102	Write-only (Devices except the LIVE20R need to call a function to disable the parameter.)	Int	1 indicates that the green light blinks; 0 indicates that the parameter is disabled.
103	Write-only (Devices except the LIVE20R need to call a function to disable the parameter.)	Int	1 indicates that the red light blinks; 0 indicates that the parameter is disabled.
104	Write-only (not supported by the LIVE20R)	Int	1 indicates that buzzing is started; 0 indicates that the parameter is disabled.

6.2 Error Codes

classname:zkfp

```
public static int ZKFP_ERR_ALREADY_INIT = 1;   /**< Initialized */
public static int ZKFP_ERR_OK = 0;        /**< Operation succeeded */
public static int ZKFP_ERR_INITLIB = -1;      /**< Failed to initialize the algorithm library */
public static int ZKFP_ERR_INIT = -2;    /**< Failed to initialize the capture library */
public static int ZKFP_ERR_NO_DEVICE = -3;       /**< No device connected */
public static int ZKFP_ERR_NOT_SUPPORT = -4;   /**< Not supported by the interface */
public static int ZKFP_ERR_INVALID_PARAM = -5;      /**< Invalid parameter */
public static int ZKFP_ERR_OPEN = -6;  /**< Failed to start the device */
public static int ZKFP_ERR_INVALID_HANDLE = -7;    /**< Invalid handle */
public static int ZKFP_ERR_CAPTURE = -8;   /**< Failed to capture the image */
public static int ZKFP_ERR_EXTRACT_FP = -9;      /**< Failed to extract the fingerprint template */
public static int ZKFP_ERR_ABSORT = -10;   /**< Suspension */
public static int ZKFP_ERR_MEMORY_NOT_ENOUGH = -11; /**< Insufficient memory */
public static int ZKFP_ERR_BUSY = -12;        /**< The fingerprint is being captured */
public static int ZKFP_ERR_ADD_FINGER = -13;    /**< Failed to add the fingerprint template */
public static int ZKFP_ERR_DEL_FINGER = -14;    /**< Failed to delete the fingerprint template */
public static int ZKFP_ERR_FAIL = -17;  /**< Operation failed */
public static int ZKFP_ERR_CANCEL = -18;   /**< Capture cancelled */
public static int ZKFP_ERR_VERIFY_FP = -20; /**<       Fingerprint comparison failed */
```

```
    public static int ZKFP_ERR_MERGE =  -22; /**<      Failed to combine registered fingerprint templates
*/
    public static int ZKFP_ERR_NOT_OPENED = -23; /**<    Device not started        */
    public static int ZKFP_ERR_NOT_INIT = -24; /**<  Not initialized      */
    public static int ZKFP_ERR_ALREADY_OPENED = -25; /**<  Device started     */
```