

License Generator Using MAC Address for Industrial Application

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Abstract - A license generator can be developed to generate particular license key for the legal users as a way of protecting their application from being used illegally (i.e. pirated). A license generator generates unique number or encryption key that identify the legal user of software application. The generated basic license key is used for the particular program and advance key is used for the subprogram and option which is selected by the user. It also help to generate license key for a particular time period. License generator using mac address and time code key will provide more security for the application and avoid piracy.

Key Words: MAC address, Time Code, Encryption, Decryption, Basic Key and Advance Key.

1. INTRODUCTION

To stop the illegal usage of software application, company always tries to create unique serial key or product key for particular application but hackers crack this serial key through some auto generated program. To solve the above problem of hacking or illegal usage, it is required to create license key that will help to be unique for each user and also this license key will be associated with the selected program.

This application is protected with a serial number key. If you type it in, the software verifies it algorithmically, rather than looking up a huge database. A license key is a specific software-based key for a particular program. It certifies that the copy of the program is original.

License generator protect software from losses due to software piracy and enable end-user organizations to

This sequence is typically entered by the user during the operation of program, and is then passed to a verification function in the program. This function manipulates the key sequence according to a mathematical algorithm and attempts to match the results to a set of valid solutions [4].

comply with software license agreements. The primary benefit of this License generator is to reduce the difficulty and increase operational transparency in order to prevent software misuse [4].

2. LITERATURE SURVEY

Previous work done: Serialization was used with the help of Data Output Stream, & Data Input Stream that saves the data content of your objects as simple types and creates License File. Serialization had to capture entire "graphs" of interconnected objects and put them back together on the receiving end but if there is any problem in serialization process then the original data content cannot be obtained (Decrypted). It was done in VB, which provides powerful mechanism for Serialization. It creates License File by serialization and store it in Objects and it does not contain Database [1].

Thus this paper overcomes the problem by providing-

- 1) Uniquely generated Basic Key.
- 2) Uniquely generated Advance Key.
- 3) Uniquely generated Time code Key for particular time period.
- 4) It is done in C# and uses AES instead of Serialization.
- 5) It stores the data contents in Database.

3.0 PROCESS TO ENCRYPT APPLICATION

3.1 Basic License Key:

license generates a key by entering MAC Address & program mask for the particular program. User

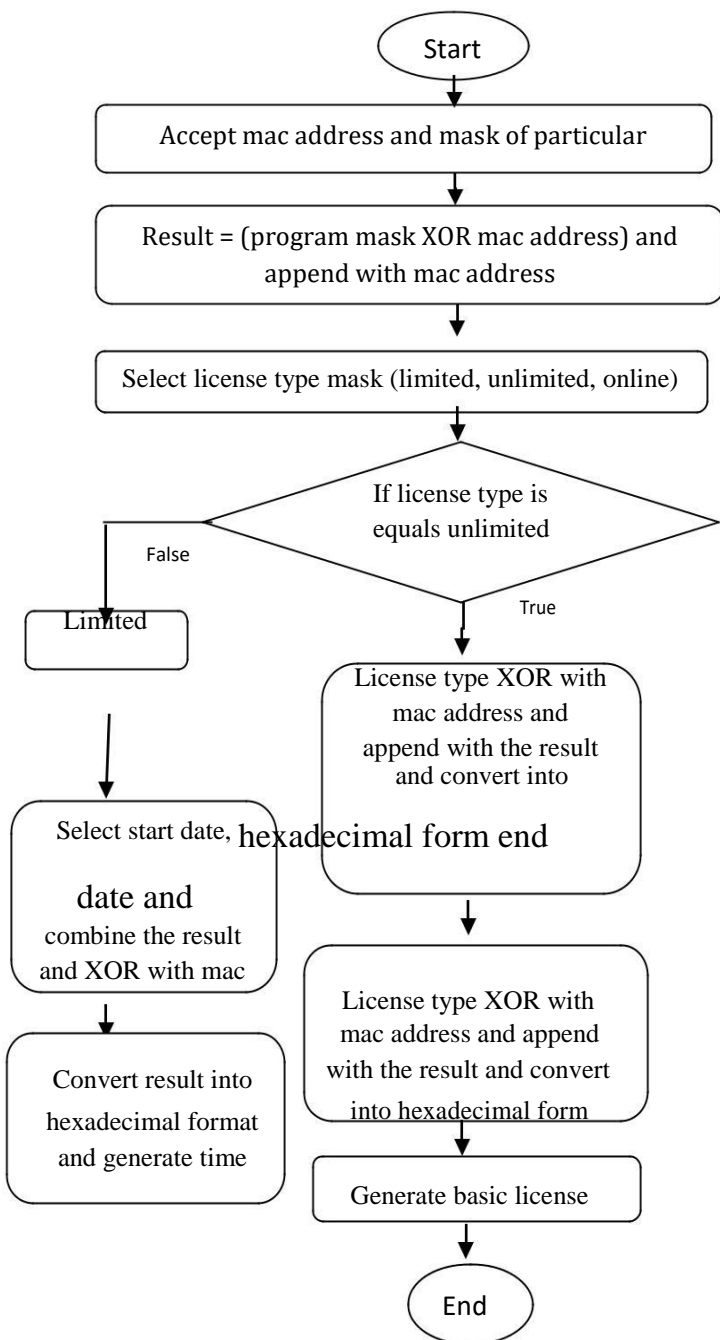
selects type of License (Limited, Unlimited) and generate encryption key over two conditions:

- 1) If user select Limited type then license key is generate for limited period

2) If user select unlimited type then license key is generate for unlimited Period.

Generate License on MAC address and performed operation to make license key. The Basic License key entered it accessible for user to use the selected Program.

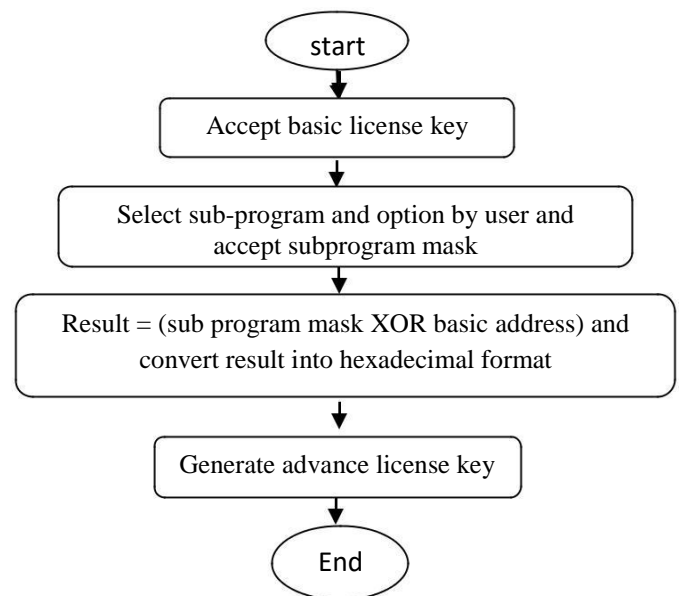
Algorithm for Basic License Encryption



3.2 Advance License Key :

Advance License key is generated after Basic License Key is created. Advance License key is generated for Sub-Programs and Options whereas Basic License key is only for Programs. User able to select multiple sub program or options within a particular program. For every selected Sub-Program, generate Advance License key for the security of Software Application. If user enters Advance License Key then user is able to do operation on selected subprogram and option.

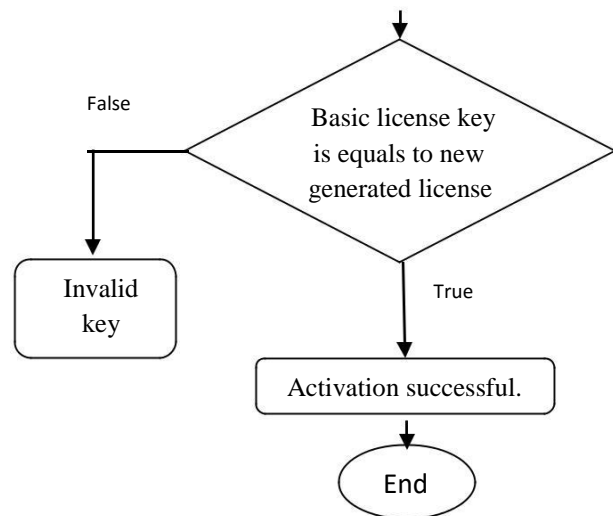
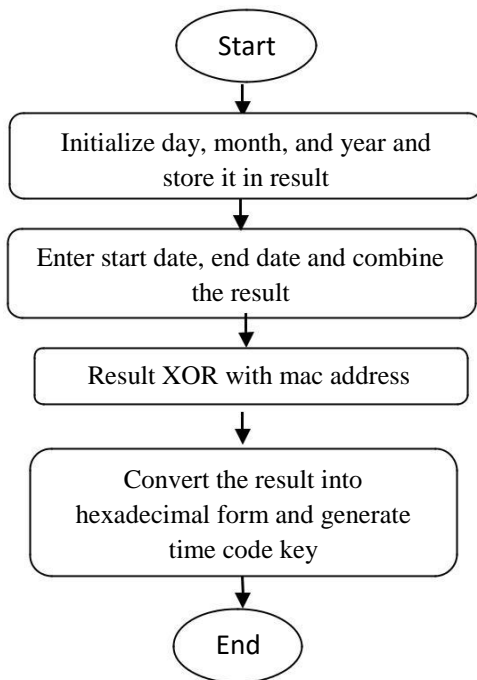
Algorithm for Advance License Encryption



3.3 Time Code license key :

Time Code generator is use when the selected License Type is Limited. Time Code is accepting different Mask for different License type in the Application i.e. Limited, Unlimited. After selecting Limited License type it will asks the Start Date & End Date for a particular time period. On clicking Generate Time Code, a unique Time Code Key is generated.

Algorithm for Time Code Key Encryption

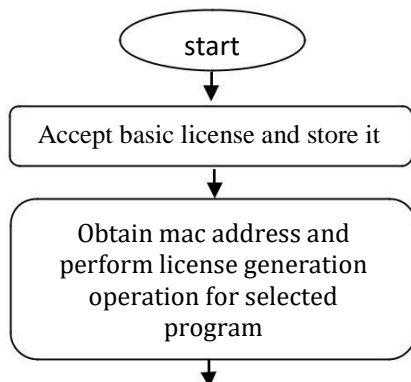


4.0 PROCESS TO DECRYPT APPLICATION

4.1 Basic License Key:

License Decryption is done on the Client’s side. It asks for the MAC Address and the basic license key of the program. For activate license user enters the Basic Key and if the key match the selected Program license is activated. If License is Limited then user will have to enter Time Code key and basic key for activating license.

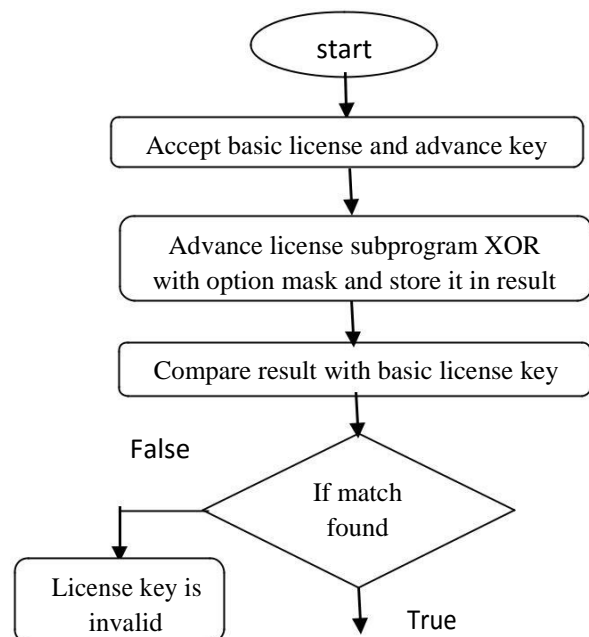
Algorithm for Basic License Decryption

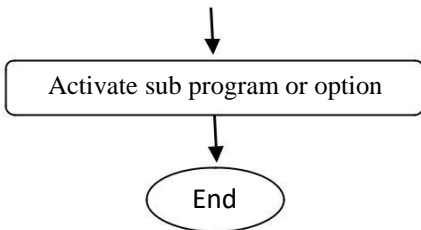


4.2 Advance License Key :

Advance License can be activated only after Basic License is activated. Advance License is for Sub-Program & Options and is generated unique key. If license type is limited then user enter mac address, basic license key and time code key for particular program. If user want to activate license for subprogram or option so need to enter generated advance license key if the Key matches then the Sub-Program can be activated. If Key does not match then the Advance License can’t be activated.

Algorithm for Advance License Decode

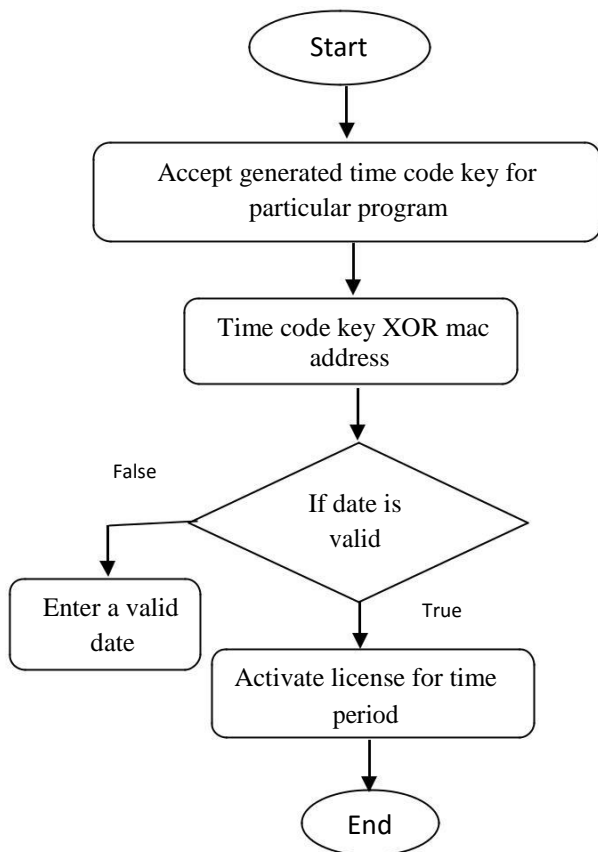




4.3 Time Code Key :

The Time Code generated in generation process is provided to the Client and particular Program or Sub-Program can be activated.

Algorithm for Time Code Key Decryption

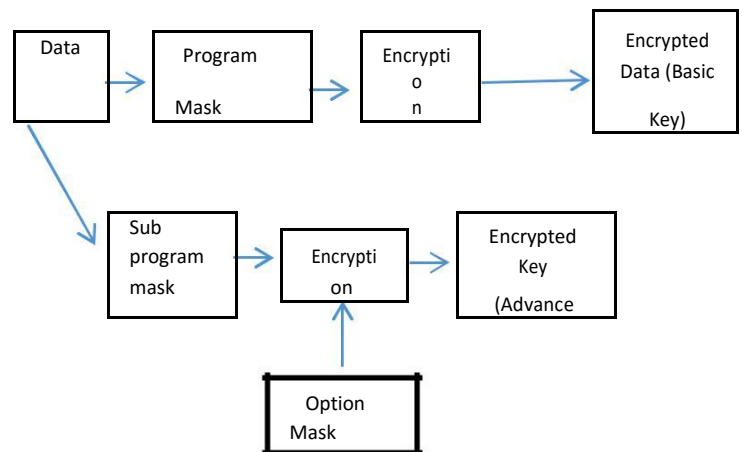


5.0 Proposed System

The proposed system facilitates us a strong and secure online encryption and decryption system. When application is encrypt the program it generates license key and combination of basic key and advance key with some mathematical operation and able to generate license for selected program.

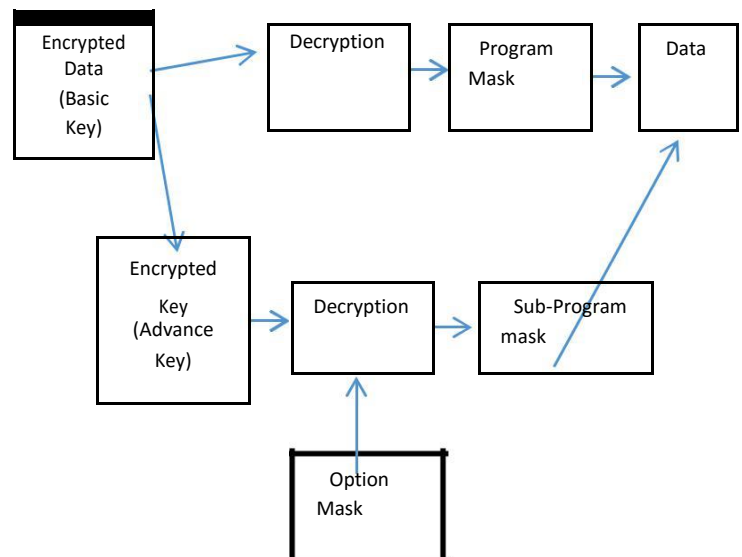
Only the programmer can make changes in it to encryption system. Same as for decrypt data on client side which is easy to decrypt the generated license key and able to do activate particular program who is authorized user.

ENCRYPTION:



Block diagram of Data Encryption

DECRYPTION:



Block diagram of Data Decryption

Algorithm for Proposed System:

AES is a new algorithm which can be used to protect data. The same generated license key is used by the symmetric-key which helps to encrypt and decrypt data.

Encryption:

Step1: accept the program mask, data and generate basic key.

Step2: accept subprogram mask, option, and data and generate advance key.

Decryption:

Step1: accept generated basic key and decrypt the program to activate basic license.

Step2: accept generated basic and advance symmetric key to decrypt sub program or option to activate Advance License.

6.0 Result

This figure shows the actual implementation of generating license key. Fig 1 shows to generate basic key for program. Fig 2 shows to generate advance license key for subprogram or option. Fig 3 shows to generate key for time period. Fig 4 shows to activate key for unlimited time. Fig 5 shows to activate key for limited period. Fig 6 shows to activate sub program. Fig 7 shows to activate option.

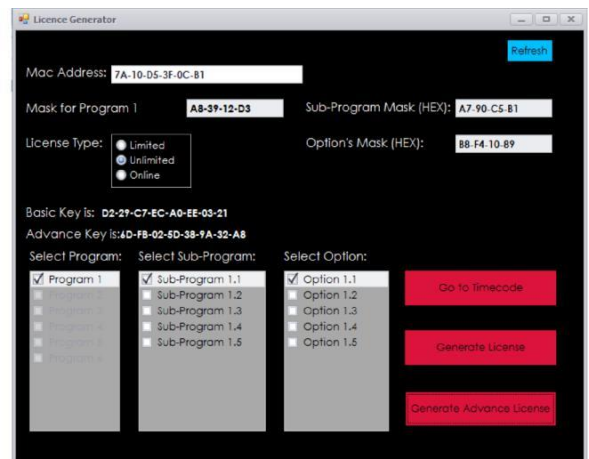


Fig 2 Generate Advance License Key

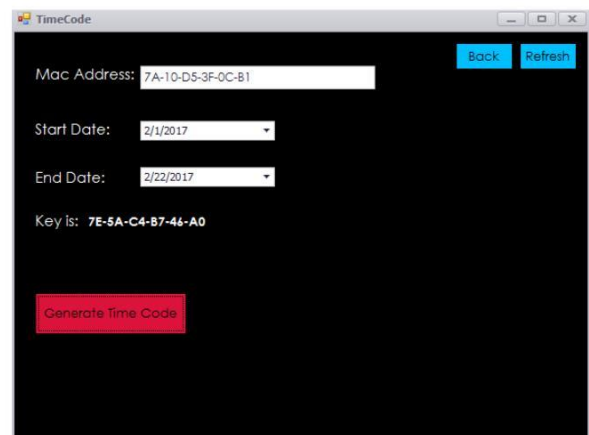


Fig 3 Generate Key for particular Time Period

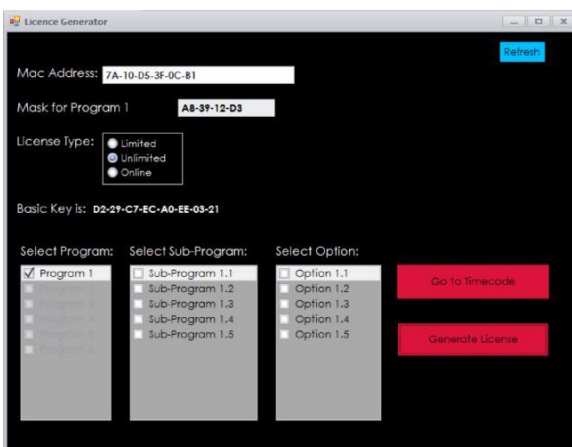


Fig 1 Generate Basic License key

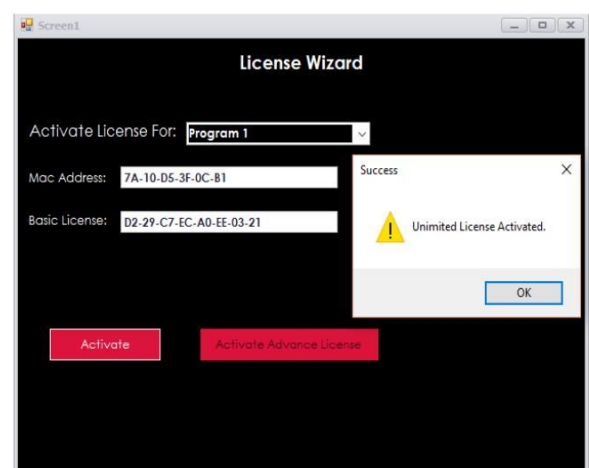


Fig 4 Activate license for Unlimited Time

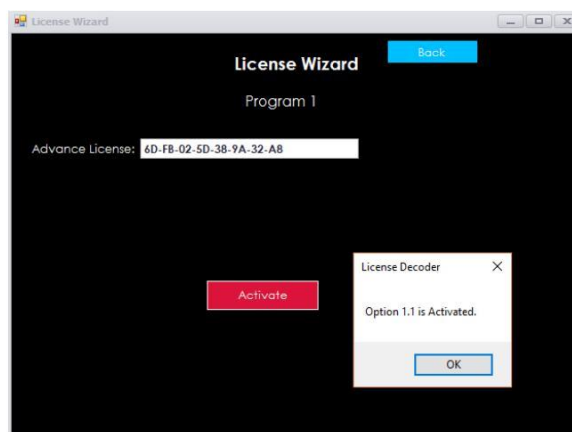
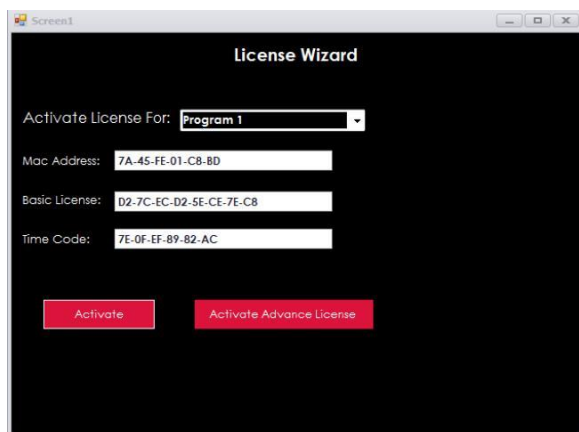
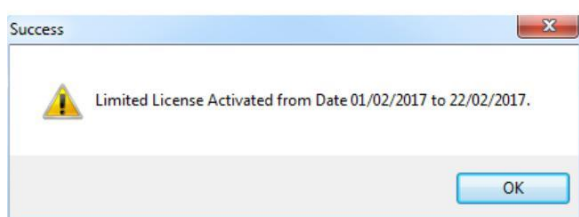


Fig 7 Activate Advance License key for Option

7.0 CONCLUSION

This help to provide more security for the application. A **key generator** is used any cryptographic protocols to generate a sequence number. This sequence is used as an encryption key at one end of communication, and as a decryption key at the other [2]. The Basic Key & Advance Key cannot be hacked easily as the keys are generated by Encryption process. So, it provides security to the product as it stops illegal usage of the software. This License Generator primarily focuses on providing ease and operational transparency to the Client in order to prevent software misuse. It is user friendly application [1].

If user select License type i.e. (online) then key generated over the internet and also decrypt on server side. License key which generate and it may verified by within the software itself or, over the Internet via online license verification system it provide easiness to the user.



Activation confirmation

Fig 5 Activate license for Limited time

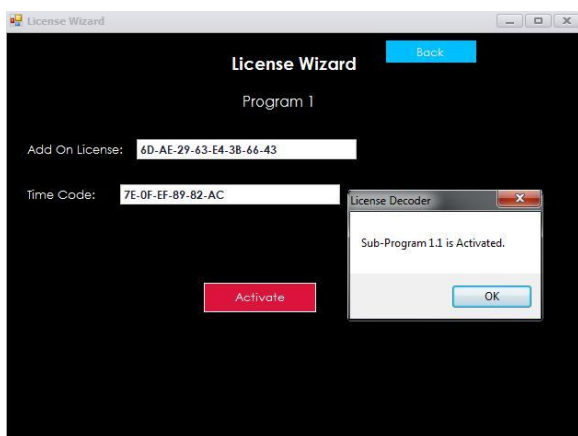


Fig 6 Activate Advance License key for Subprogram

8.0 REFERENCES-

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