

# **Password Recovery Tool**

**Version 1.0**

# Introduction

Like any reasonably developed system, HDD and BIOS systems on laptops need enormous protection. Systems that are using password generators in order to protect their security are using different algorithms for that. Algorithms can vary based on their difficulty level. Current generation laptops require good password generators in order to make their server as safe as possible.

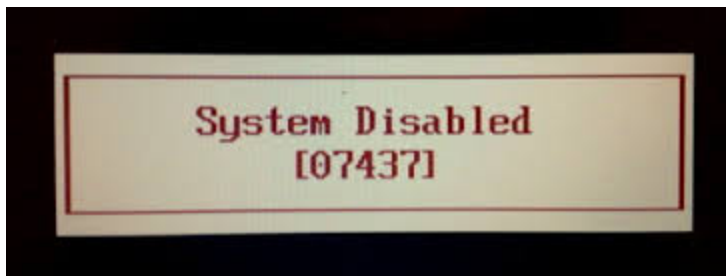
Mostly all laptops are using master passwords(which are unique in each laptop) in order to protect their systems. In order to penetrate the BIOS system one should find a way to disable BIOS passwords. Sometimes it can be very important for the laptop users to know the master passwords of their laptops. However the algorithms to figure out the password are not available to every user.

As mentioned is Dogbert's blog when a laptop is locked with password, a checksum of that password is stored to a so-called FlashROM - this is a chip on the mainboard of the device which also contains the BIOS code and other settings, e.g. memory timings.(Dogbert's Blog, 2009).

If the user will try to submit an invalid password for three times he/she is going to receive an error message displayed on the computer screen.



or



The Windows application "Password Recovery Tool was created" to crack the master passwords of HDD and BIOS system of ACER, Sony Vaio and Dell laptops. The program takes the license numbers of those laptops(which are also unique for every laptop) as an input and gives the

master codes of HDD and BIOS as an output. The further chapters are instructional descriptions of how to effectively use this application.

## Chapter 1: ACER Laptops

First of all we are going to bring some examples(tests) from the Internet that demonstrates the connection between the license number of ACER 8-digit laptops and their corresponding master codes.

License Number	Master Password	Source
86655234	39733810	<a href="http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0">http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0</a>
93110767	22878369	<a href="http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0">http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0</a>
76119168	69871168	<a href="http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0">http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0</a>
68682759	77780399	<a href="http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0">http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;art=0</a>
75571328	60459908	<a href="http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;ostdays=0&amp;postorder=asc&amp;start=45&amp;sid=4ed8a7299353bb44a72a33eb0859ae7b">http://www.allservice.ro/forum/viewtopic.php?t=1892&amp;ostdays=0&amp;postorder=asc&amp;start=45&amp;sid=4ed8a7299353bb44a72a33eb0859ae7b</a>
12345678	03023278	<a href="http://laptoplabelt.blogspot.in/2011/12/laptops-bios-passwords.html">http://laptoplabelt.blogspot.in/2011/12/laptops-bios-passwords.html</a>
34567934	12534315	<a href="http://www.allservice.ro/acer/">http://www.allservice.ro/acer/</a>
98567343	27445985	<a href="http://www.allservice.ro/acer/">http://www.allservice.ro/acer/</a>
67574354	78452990	<a href="http://www.allservice.ro/acer/">http://www.allservice.ro/acer/</a>

**Algorithm:** The algorithm was for hacking ACER master passwords was designed based on the data that available from the Internet. The general idea works like this:

- The license number consists of 8 digits,
- The corresponding master password also consists of 8 digits,

- Every bite of 8-digit master password has a corresponding value based on what value the license number's corresponding value has. The value for the master password's byte is always a fixed number. If lets say the second digit of the license number is 4, then the value of master password's second digit will be 2. Below is the table that demonstrates the relationship between the values of the bytes of the license number and the corresponding byte values of the master password.

<b>License Number - 1st Digit</b>	<b>Master Password - 1st Digit</b>
0	1
1	0
2	3
3	2
4	5
5	4
6	7
7	6
8	3
9	2

<b>License Number - 2nd Digit</b>	<b>Master Password - 2nd Digit</b>
0	5
1	4
2	3
3	2
4	1
5	0
6	9
7	8

8	7
9	6

License Number - 3rd Digit	Master Password - 3rd Digit
0	9
1	8
2	1
3	0
4	5
5	4
6	7
7	6
8	7
9	6

License Number - 4th Digit	Master Password - 4th Digit
0	6
1	7
2	8
3	9
4	2
5	3
6	4
7	5
8	8

9	9
---	---

License Number - 5th Digit	Master Password - 5th Digit
0	8
1	9
2	0
3	1
4	2
5	3
6	4
7	5
8	0
9	1

License Number - 6th Digit	Master Password - 6th Digit
0	0
1	1
2	8
3	9
4	4
5	5
6	2
7	3
8	2

9	3
---	---

License Number - 7th Digit	Master Password - 7th Digit
0	2
1	3
2	0
3	1
4	8
5	9
6	6
7	7
8	0
9	1

License Number - 8th Digit	Master Password - 8th Digit
0	6
1	7
2	4
3	5
4	0
5	1
6	8
7	9
8	8



**How to use:** Open the main page of the Windows Application(double click on that).

Notice that there are three buttons - for ACER 8-digit Password Calculator, Sony Vaio 7-digit Password Calculator, and Dell. For this section we will discuss only the first button - ACER 8- digit Password Calculator.

**Reminder:** The length of the license number and master password should be 8-digits long.

To access the Calculator for ACER laptops just click one time on the first button. It should bring to

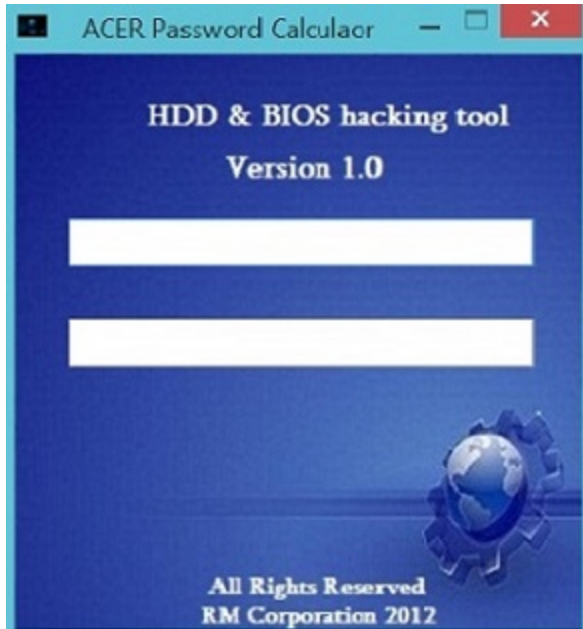
another window, where is the actual Calculator.

The algorithm for ACER 8-digit Password Calculator was decoded by Rafayel Mkrtchyan in 2012. That was the main reason why the team members decided to address as the year of the creation of the idea as 2012. Other parts of the program were developed during the Hackathon.

The first line of the ACER Password Calculator is designed for the input - the license number of the laptop. Remember again that the length of the license number should be 8-digits long. After entering the license number just click Enter and the result(The Master Password) will be automatically presented.

The user interface based on C# programming language was also created during the Hackathon. In the future it can be updated and developed more. For this moment the team was concentrated more on the correctness of the application rather than the User Interface. You can try through several examples how the program actually works.





## Chapter 2: Sony Vaio

Before presenting the Calculator for Sony Vaio laptops let's present some examples found from the Internet to show how the License numbers of Sony Vaio laptops are connected to the Master Passwords of those laptops.

License Number	Master Password	Source
4534567	6348669	<a href="http://www.allservice.ro/sony/">http://www.allservice.ro/sony/</a>
1234567	9648669	<a href="http://dogber1.blogspot.com">http://dogber1.blogspot.com</a>
7654321	3228805	<a href="http://dopelselly.blogspot.com/2013/05/dell-bios-password-unlock-hp-compaq.html">http://dopelselly.blogspot.com/2013/05/dell-bios-password-unlock-hp-compaq.html</a>
3489235	7493991	<a href="http://dogber1.blogspot.com">http://dogber1.blogspot.com</a>
6723560	4159666	<a href="http://www.allservice.ro/sony/">http://www.allservice.ro/sony/</a>

**Algorithm:** The algorithm for cracking the Master Password of Sony Vaio laptops is very similar to that of the ACER laptops. However instead of 8-digits, there are only 7-digits for Sony-Vaio

License numbers and Master Passwords. The algorithms for this Calculator was decoded during the Hackathon organized by CSUA. Below is the table that demonstrates the relationship between the values of the bytes of the license number and the corresponding byte values of the master password.

License Number - 1st Digit	Master Password - 1st Digit
0	0
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1

License Number - 2nd Digit	Master Password - 2nd Digit
0	8
1	7
2	6
3	5
4	4
5	3
6	2
7	1

8	0
9	9

License Number - 3rd Digit	Master Password - 3rd Digit
0	7
1	6
2	5
3	4
4	3
5	2
6	1
7	0
8	9
9	8

License Number - 4th Digit	Master Password - 4th Digit
0	2
1	1
2	0
3	9
4	8
5	7
6	6
7	5

8	4
9	3

License Number - 5th Digit	Master Password - 5th Digit
0	1
1	0
2	9
3	8
4	7
5	6
6	5
7	4
8	3
9	2

License Number - 6th Digit	Master Password - 5th Digit
0	2
1	1
2	0
3	9
4	8
5	7
6	6
7	5

8	4
9	3

License Number - 7th Digit	Master Password - 7th Digit
0	6
1	5
2	4
3	3
4	2
5	1
6	0
7	9
8	8
9	7

### How to Use:

- Open the main page of the Windows Application(double click on that).
- To access the Calculator for Sony Vaio laptops just click one time on the first button. It should bring to another window, where is the actual Calculator.
- The first line of the Sony Vaio Password Calculator is designed for the input - the license number of the laptop. After entering the license number just click Enter and the result(The Master Password) will be automatically presented.
- **Reminder:** The length of Sony Vaio license number and master password should be 7-digits long.

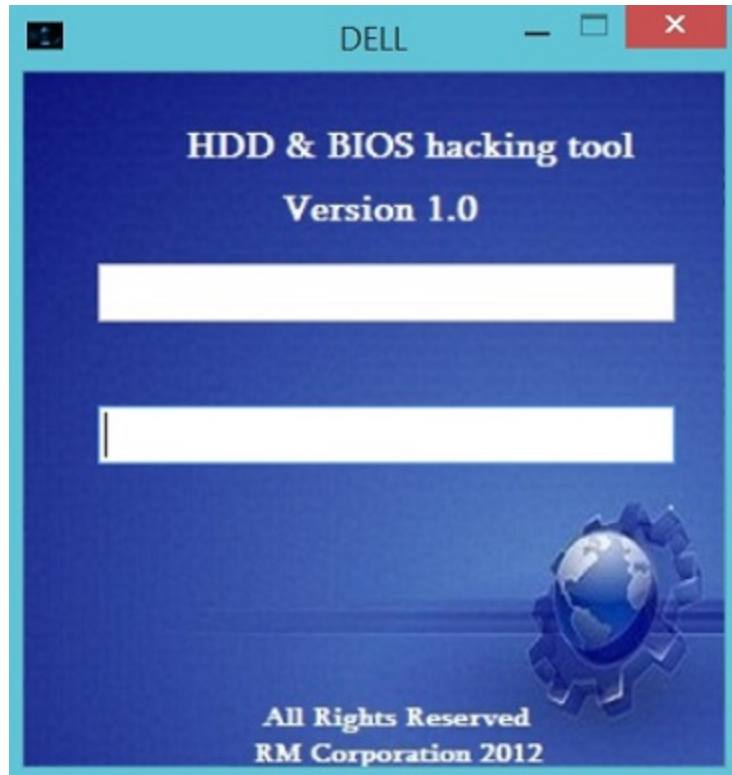


## Chapter 3: Dell Laptops

First of all lets present some of the examples found from Internet that show the relation between the License Numbers and Master Passwords of Dell Laptops.

License Number	Master Password	Source
1234567-595B	46rg65ky	<a href="http://hpgl.blog.ru/">http://hpgl.blog.ru/</a>
1234567-D35B	5tc8q9re	<a href="http://hpgl.blog.ru/">http://hpgl.blog.ru/</a>
1234567-2A7B	J1KuwWpSUgnDarfi	<a href="http://dogber1.blogspot.com">http://dogber1.blogspot.com</a>
2N96RG1-595B	Gkhg4x13	<a href="https://answers.yahoo.com/question/index?qid=201408114539AAKGkpy">https://answers.yahoo.com/question/index?qid=201408114539AAKGkpy</a>
4523534-D35B	z6jhhs5k	<a href="http://dogber1.blogspot.com">http://dogber1.blogspot.com</a>

**How to Use:** Open the main page of the Windows Application(double click on that). The structure of Dell License Numbers is Represented like this: \*\*\*\*\* - <serial code>.



The serial code can be either 595B, D35B or 2A7B. This is the Window for the Calculator or Dell laptops.

The first line is the place where the user should input the License Number of Dell laptop. After entering the License Number the user should press the Enter button. The second line will output the Master Password for the system.

**Remember:** The length of the License Number should be 12 digits long.

This part as a one particular section was also develop in Hackathon by the members of the team.

## Conclusion

This is the initial - Beta version of the application “Password Calculator” named Version 1.0 . We don't claim us to be perfect and this program can contain some small bugs, because it has been written in few hours. The team members worked together and did their bests to represent the best product possible in this time frame. The time limit forced us to work only for three kind of laptops - ACER, Sony Vaio and Dell. However, other laptops also have different Master Password Generators that can be analyzed in the future.

This program is aimed to be developed in the future. The idea became very attractive for the members of the team and we are planning to continue working on this application in the future. We will try to decode the algorithms of Master Password Generators of other laptops and combine all of them together in one application.

This application was written in 15 hours in C# programming language in .Net framework. Because of being a Windows application it only runs on computers where are Windows OS. In the future we are planning to create another - more universal application.

