



"cracking" the passwords of video games is of great interest to me. I may create guides like this for other games at some point in the future; I have enough data to write one for Castlevania II: Simon's Quest, Gauntlet, or Legacy of the Wizard, for example.

If you find this guide at all useful, or even just cool or interesting, please e-mail me at [doug.babcock@gmail.com](mailto:doug.babcock@gmail.com); I would love to hear from you.

One last note: the mechanics of actually creating a password by hand can be tedious and error-prone. I have created a tool for generating passwords more easily. It is available on the World Wide Web at the following address:

<http://www.dougbabcock.com/metal-gear.php>

As far as I can tell, this password generator now works 100% of the time (although I obviously can't test every single password to make sure).

Thanks muchly for looking at my guide, and I hope that you will find it fun or interesting in some way.

--- [2] THE PASSWORD TABLE -----

VermonCaTaffy	SuperComputer	Rank+4	Rank+2	Rank+1
Tank	Bull Tank	Shotgunner	Twin Shot	MachineGunKid
M. Gun	Missile	Explosive	Mine	Hand Gun
Prisoner #1	Prisoner #2	Prisoner #3	Prisoner #4	Prisoner #5
Prisoner #6	Prisoner #7	Prisoner #8	Prisoner #9	Prisoner #10
Prisoner #11	Prisoner #12	Prisoner #13	Prisoner #14	XXXXXXXXXXXXXX
Card5	Card4	Card3	Card2	Card1
B.B. Suit	Cardboard	Binoculars	Gasmask	Cigarettes
Light	Antidote	Antenna	Armour	Detector
XXXXXXXXXXXXXX	Rations+8	Rations+4	Rations+2	Rations+1
Hand Gun+16	Hand Gun+8	Hand Gun+4	Hand Gun+2	Hand Gun+1
Missile+16	Missile+8	Missile+4	Missile+2	Missile+1
Explosive+16	Explosive+8	Explosive+4	Explosive+2	Explosive+1
Mine+16	Mine+8	Mine+4	Mine+2	Mine+1
M. Gun+16	M. Gun+8	M. Gun+4	M. Gun+2	M. Gun+1
Grenade L.+16	Grenade L.+8	Grenade L.+4	Grenade L.+2	Grenade L.+1
Rocket L.+16	Rocket L.+8	Rocket L.+4	Rocket L.+2	Rocket L.+1
Grenade L.+64	Grenade L.+32	M. Gun+128	M. Gun+64	M. Gun+32
Goggles	Uniform	Coward Duck	Fire Trooper	Arnold
Oxygen	Compass	Silencer	Rocket L.	Grenade L.
Captured!	XXXXXXXXXXXXXX	XXXXXXXXXXXXXX	Prisoner #15	Prisoner #16
Hand Gun+64	Hand Gun+32	Prisoner #17	Prisoner #18	Prisoner #19
Glove	Transmitter	Prisoner #20	Prisoner #21	Prisoner #22
Equip. Recov	Hand Gun+128	Card8	Card7	Card6

Bits-to-digit key:

-----  
 00000: 1 00001: 2 00010: 3 00011: 4  
 00100: 5 00101: 6 00110: A 00111: B

01000: C 01001: D 01010: E 01011: F  
01100: G 01101: H 01110: I 01111: J  
10000: K 10001: L 10010: M 10011: N  
10100: O 10101: P 10110: Q 10111: R  
11000: S 11001: T 11010: U 11011: V  
11100: W 11101: X 11110: Y 11111: Z

Last Digit Value conversion key:

```
-----  
'1': 0   '2': 1   '3': 2   '4': 3  
'5': 4   '6': 5   'A': 6   'B': 7  
'C': 8   'D': 9   'E': 10  'F': 11  
'G': 12  'H': 13  'I': 14  'J': 15  
'K': 16  'L': 17  'M': 18  'N': 19  
'O': 20  'P': 21  'Q': 22  'R': 23  
'S': 24  'T': 25  'U': 26  'V': 27  
'W': 28  'X': 29  'Y': 30  'Z': 31
```

--- [3] THE BASICS OF READING THE TABLE -----

Passwords in Metal Gear are twenty-five digits long, divided into five groups of five digits each. Each row in the table above corresponds to one digit of a password.

Each digit of the password contains five pieces of information that are either true/on ("1") or false/off ("0"). I will call one of these pieces of information a "bit." Thus, each digit is composed of five bits. In case the meaning of a specific item of the table being "on" or "off" is unclear, I have described them completely in Section 6.

The bits-to-digit key at the bottom of the table tells you which combination of bits convert to which digit. For example, if the player possesses the M. Gun, Mines, and the Hand Gun, but does not have Missiles or Explosives, then the bits for the third digit of the password would be "10011." (This is by comparing the information to the third row of the table.) The key at the bottom says that these bits "10011" correspond to the digit "N". Thus, for any player who possesses this particular combination of weapons, the third digit of his/her password would be "N".

You may notice that the last (25th) row of the table is blank. This is because the last digit of the password is very special and doesn't act like any of the others. To learn more about this, I invite you to learn:

--- [4] ALL ABOUT THE LAST DIGIT -----

The last digit of the password employs what is called a "checksum." Checksums are often used in electronics and computing when copying data, to ensure that the data is being copied correctly.

The last digit, then, does not actually hold any information; rather, when a password is issued, the last digit is completely determined by the rest of the password. If when a password is entered, the last digit does not match what it is supposed to be, then the password is denied. (This means that passwords that are copied down incorrectly are very unlikely to work; also, just randomly entering a password is very unlikely to work.)

When creating a password, to determine what the last digit should be, follow this procedure:

1. Convert the first twenty-four digits of the password to numbers using the

Last Digit Value conversion table.

2. Add all these numbers up.
3. If the sum you got in step 2 is bigger than 507, then add an additional 2. If the sum is bigger than 252 (but not bigger than 507), then add an additional 1.
4. Now add an additional 7, regardless.
5. If the number you got in step 4 is 32 or larger, subtract 32 from it. Keep doing this until you get a number less than 32.
6. Convert this number back to a digit using the Last Digit Value conversion table. This will be the last digit of the password.

--- [5] SOME EXAMPLES -----

Let's construct a password that might occur at the beginning of the game: Solid Snake has a one-star rank; he possesses Cigarettes, Binoculars, Card1, and a Gas Mask; he has no weapons; and he has not defeated any bosses or rescued any prisoners. (This means that almost all of the bits in the password are going to be off, or "0".)

For Snake's rank, look at the first row of the table. To get a rank of one star, we just want to set Rank+1 to "1". The other bits are for higher ranks or defeating bosses, so the others should all be "0". So, the bits of the first digit of the password are 00001, which the key tells us means the first digit should be '2'.

For the second through sixth digits, ALL of the bits should be "0". Therefore, the bits for these digits are 00000, which the key tells us means the second through sixth digits should be '1'.

Recall that we want Snake to have Card1, but none of the other Cards. Thus, in the seventh digit, the bits should be 00001, which we know means a '2'.

The eighth digit is a little more complex, but not much. Snake has Binoculars, a Gas Mask, and Cigarettes, but not a Bomb-Blast Suit or Cardboard. Binoculars, Gas Mask, and Cigarettes are the right three items in Row 8 of the table, so the bits of the eight digit are 00111. Looking at the key again, this means that the eighth digit should be a 'B'.

For the rest of the table, every single bit should be set to "0", so digits nine through twenty-four are all '1'. So far, then, the code looks like this:

```
21111 12B11
11111 11111
1111?
```

The last digit is usually the trickiest part. For this code, it's a little bit easier, because there are a lot of 1's, and 1's don't change the last digit at all.

To find out what the last digit is, we add up the "last digit" values from the key in Section 2, then add 7. The value for '2' is 1, and the value for 'B' is 7. If I add all these up, I get  $(1+1+7) + 7 = 16$ . Normally we would now divide by 32 and take the remainder, but 16 doesn't even go into 32, so the remainder is just 16. This corresponds to 'K' in the "last digit" key, so the last digit is 'K', and the final password is

```
21111 12B11
11111 11111
```

1111K

---

Now let's make a password that has Snake with a one-star rank, and his only possessions a Hand Gun with 155 rounds and a Rocket L. with no rounds.

The one-star rank means the first digit will again have bits 00001, so it will be '2'.

The Hand Gun is in the third row of the table on the far right, so the third digit should have bits 00001, and will also be '2'.

The Rocket L. is in the twentieth row, second from the left. This means the twentieth digit should have bits 00010, so it'll be a '3'.

Now comes the tricky part: giving the Hand Gun 155 rounds in a way the game can understand. Looking through the table, you'll notice that the only increments for Hand Gun ammunition are +1, +2, +4, +8, +16, +32, +64, and +128. It turns out that  $155 = 128 + 16 + 8 + 2 + 1$ , so we want to set the bits corresponding to Hand Gun+128, Hand Gun+16, Hand Gun+8, Hand Gun+2, and Hand Gun+1. The password at this point is

```
21211 11111
V1111 11113
111C?
```

(Double-check the other digits 'V' and 'C' if you like.)

Now comes the last digit. The values for '2', '2', 'V', '3', and 'C' are 1, 1, 27, 2, and 8, respectively. Their sum plus seven is  $(1 + 1 + 27 + 2 + 8) + 7 = 46$ . The correct last digit is the remainder when 46 is divided by 32. (This can be found by subtracting 32 repeatedly from 46 until we get something less than 46.) In this case, we only have to do one subtraction:  $46 - 32 = 14$ , which corresponds to I. Thus, the final password is:

```
21211 11111
V1111 11113
111CI
```

(Note that if you put in this password, Solid Snake magically acquires cigarettes. He gets these whether the password gives them to him or not.)

The fact that we could write 155 as the sum of some of the increments in the table was not an accident. In fact, any amount of ammunition possible to obtain in the game can be written exactly one way as the sum of increments in the table. To do this, take the number of rounds you want for your weapon, then keep subtracting the largest increment less than or equal to your number, keeping a list of what you've subtracted. Repeat until you get to 0.

--- [6] THE GORY DETAILS -----

First, here are the meanings of each item of the table being a "1" or a "0":

-If the cell contains the name of a boss (for example, "Vermon CaTaffy"), then a "1" means the player has defeated that boss, and a "0" means the player has

not defeated that boss. If the Supercomputer cell is set to "1", then the player will start in subbasement 100 of Building #3 with a countdown.

-If the cell contains the name of a weapon (for example, "M. Gun"), then a "1" gives the player that weapon, and a "0" does not give the player that weapon.

-If the cell contains the name of a piece of equipment, then a "1" gives the player that piece of equipment, and a "0" does not give the player that piece of equipment. There is no bit for rations; the player will receive rations if any of the "Rations+X" bits are set. The player will always receive Cigarettes; it does not matter if the Cigarettes bit is set or not. When the game issues a password to a player who has died, the Cigarettes bit will always be set, even if Snake did not have Cigarettes when he died.

-If the cell contains the word "Prisoner" (for example, "Prisoner #1"), then a "1" means the player has rescued that prisoner, and a "0" means the player has not rescued that prisoner. A list of prisoners is given in Section 8. Solid Snake receives a rank increase for every 5 prisoners rescued, unless he is already four-star rank, in which case his promotion is forfeited.

-If the cell contains the name of a weapon followed by a plus sign and a number (for example, "Hand Gun+16"), then a "1" gives the player the additional amount of ammunition indicated for the specified weapon, and a "0" does nothing. Note that for any possible amount of ammunition for a weapon, it is possible to write that amount exactly one way by using the bits allowed for that weapon. If you enter a password with weapon ammunition but not the weapon, you will have that much ammunition already when you locate the weapon.

-If the cell contains the word "Rations" followed by a plus sign and a number (for example, "Rations+8"), then a "1" gives the player the additional number of rations indicated, and a "0" does nothing. If none of these bits are set, "Rations" will not be visible in the Equipment subscreen; otherwise it will.

-If the cell contains the word "Rank" followed by a plus sign and a number (for example, "Rank+4"), then a "1" gives the player the additional number of stars indicated, and a "0" does nothing. If a password asks for a rank less than 1 or more than 4, the password is denied.

-If the "Captured!" and "Equip. Recov" cells are both "1", then the player has been captured, and recovered his/her equipment afterwards. The player cannot be captured again.

-If the "Captured!" cell is "1" and the "Equip. Recov" cell is "0", then the player has been captured, but has not yet recovered his/her equipment. The player will start in the hidden solitary cell with no equipment. When the player recovers his/her equipment, it will contain all equipment specified in the password, plus the Transmitter. The player cannot be captured again.

-If the "Captured!" cell is "0" and the "Equip. Recov" cell is "0", then the player has not been captured, and has not yet recovered his/her equipment. The player can be captured once he/she possesses Card2.

-If the "Captured!" cell is "0" and the "Equip. Recov" cell is "1", then the player has not been captured, but has recovered his/her equipment. (This is not possible when actually playing, because you need to be captured before recovering your equipment.) If you enter a password like this and are captured, the enemy will not take your weapons and armor away.

-If the cell contains "XXXXXXXXXXXX", then as far as I can tell, it makes no difference whatever whether the cell is "1" or "0". For some of these cells,

the game will remember whether the cell is "1" or "0" when subsequently issuing passwords; for otehrs, the game will automatically reset the cell to "0".

-The last digit is special, and does not act like any other digit. See Section 4 for details.

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Here's some info about what the "Captured!" and "Equip. Recov" bits mean.

The game sets the "Captured!" bit as soon as Solid Snake is captured (put "under arrest") in Building 1. The game sets the "Equip. Recov" bit when Snake recovers his weapons and equipment after being captured.

Solid Snake can be captured in the appropriate location provided two things are true. The "Captured!" bit must be "0", and he must possess Card2. If you are captured when the "Equip. Recov" bit is already set, then you will start with all your weapons and equipment after being captured.

---

Here's how to tell where Solid Snake will start the game.

If the "Captured!" bit is "1" and the "Equip. Recov" bit is "0", then Solid Snake will start in the cell he is taken to after being captured. Otherwise, if the Supercomputer has been defeated, Solid Snake will start in subbasement 100 of Building #3, very near the end. Otherwise, Solid Snake will start in a location depending on his rank.

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Here's how to tell whether the game will reject a password.

In order for a password to work, all the following conditions must be met:

- The last digit must be the correct value.
- The rank must be at least 1.
- The rank must be at most 4.
- The password must give you no more than 20 mines.
- The password must give you no more than 20 explosives.
- The password must give you no more than 20 missiles.
- The password must give you no more than 90 rounds for the grenade launcher.
- The password must give you no more than 30 rounds for the rocket launcher.

\*\*\*Note that you CAN have as many as 255 rounds for the hand gun or machine gun, even though you can't get more than 250 by actually playing the game. You can also have as many as 15 rations, although you can only get up to 12 by playing the game.

As far as I know, the things listed above are the ONLY criteria which determine whether to deny a password. Thus, it is possible to enter many passwords that are not actually possible to get in the game.

--- [7] SOME NOTEWORTHY PASSWORDS -----

Password at the beginning of the game:

21111 11211  
11111 11111  
1111D

All weapons with full ammo (Hand Gun and M. Gun with 255 instead of 250), all equipment, 15 rations, four-star rank, all bosses defeated, all prisoners rescued, captured, and retrieved equipment:

WZZZZ YZZZJ  
ZOOOZ UYRZZ  
NZZZ3

Same as above, but no bosses defeated, no prisoners rescued, no transmitter, not been captured, and not retrieved equipment:

51Z11 1ZZZJ  
ZOOOZ UYRSZ  
1SKJI

Same as above, but one-star rank (so basically, start the game with all equipment except the transmitter):

21Z11 1ZZZJ  
ZOOOZ UYRSZ  
1SKJF

Start game in cell, and be trapped permanently in the building:

2511C 11111  
11111 11111  
K1115

Start game in cell with Supercomputer defeated (you die when the countdown ends):

D1111 11111  
11111 11111  
K1111

Start game with only Cigarettes, but with Supercomputer and Vermon CaTaffy defeated (so you can win the game immediately; hold right on the control pad as soon as you enter the Supercomputer's room, and go in the elevator on the left):

T1111 11111  
11111 11111  
11111

--- [8] PRISONER LIST -----

Here is a list of prisoners with locations. Building 1 is the building with four floors containing Machine Gun Kid and Twin Shot. Building 2 is the building with three floors containing the Bull Tank and Coward Duck. Building 3 is the building containing the Supercomputer and Vermon Cataffy. Building 4 is the building you are put in when you are captured, and where you rescue



Ellen. Building 5 is the building containing the Fire Trooper, where you rescue Dr. Pettrovich.

Prisoner #1: Building 1, 2nd floor, 2 screens right from Machine Gun Kid.

Prisoner #2: Building 1, 2nd floor, 1 screen right from Machine Gun Kid.

`That was a close call! Dr. Pettrovich is being held prisoner in a cell on the rooftop.'

Prisoner #3: Building 1, 1st floor, 1 screen up from the truck in which you get captured.

`That was a close call! The best way to get to the hidden cell room is to let the enemy capture you on purpose!'

Prisoner #4: Building 1, 1st floor, 2 screens up from the truck in which you get captured.

`That was a close one! Fox hounder agent "Grey Fox" is locked up in a hidden solitary cell room.'

Prisoner #5: Building 1, 4th floor, behind Twin Shot, left room.

`That was a close call! Dr. Pettrovich has just been moved to Building #2. Building #2 is located about 10 km north of here.'

Prisoner #6 [Ellen]: Building 4, 1 screen up from the cell you are put in when you get captured, in a secret room.

`Oh, thank you! I am Dr. Pettrovich's daughter, Ellen. My father was blackmailed into creating the awful Metal Gear. Please help my father before it's too late!'

Prisoner #7 [Grey Fox]: Building 4, in the cell you are put in when you get captured, in a secret room.

`You must be a newcomer to the movement. Am I ever glad to see you! I'm agent "Grey Fox!" The enemy is constructing the final weapon, the "Metal Gear." It is a walking tank. It has full nuclear capability and can traverse any type of ground. If the enemy can complete this, they can launch a nuclear attack from any spot on the Earth. The Metal Gear must be destroyed by any means available before it is completed! There is only one way to destroy it. The inventor of the Metal Gear, Dr. Pettrovich, is the only one who knows. Dr. Pettrovich is being held prisoner somewhere in Building #1. You must try to find him!'

Prisoner #8: Building 1, 4th floor, in the leftmost part of the upper side of the suspension bridge.

Prisoner #9: Building 1, 3rd floor, 1 screen up from the electric floor.

`That was a close call! Resistance fighter Diane will now support us over frequency 12033. Diane is familiar with enemy activity.'

Prisoner #10: Building 1, 3rd floor, 1 screen south of the elevator on the left side of the building.

Prisoner #11: Building 1, 2nd floor, 1 screen left and 1 screen up from the Machine Gun Kid.

Prisoner #12: Building 3, subbasement 100, on the screen right after you leave the elevator.

`That was a close call! The leader of the enemy fortress is the supreme commander of "Fox Hounder," the Big Boss! He has been behind everything all along!'

Prisoner #13 [Jennifer's brother]: Building 2, 1st floor, on the other side of the long underwater trip. (The two prisoners on either side of Jennifer's brother do not change the password at all. I am still working out the details of how the three prisoners work. My hunch is that only rescuing Jennifer's brother has any effect at all.)

`That was a close call! I am Jennifer's brother. When you make your getaway, take the elevator to the left' [sic]

Prisoner #14: Building 5, inside between the entrance and the Fire Trooper.

Prisoner #15: Building 1, 3rd floor, 1 screen left of gas room.

Prisoner #16: Building 1, 3rd floor, 1 screen down from gas room.

`That was a close call! Fox Hounder infiltrated the enemy several days ago. They have captured him, but he is alive.'

Prisoner #17: Building 2, 3rd floor, outside the elevator that moves up.

`That was a close call! Dr. Pettrovich is on the 2nd floor.'

Prisoner #18 [Dr. Pettrovich]: Building 5, behind the Fire Trooper. (In the game, you can only rescue Dr. Pettrovich if you have previously rescued Ellen.)

`I am Dr. Pettrovich. The Metal Gear is located about 20km north of this building. It is in subbasement 100 of Building #3. We have to set plastic explosives on the supercomputer that controls all the Metal Gear functions. No matter what, you have to set 16 plastic explosives. Good luck!'

Prisoner #19: Building 2, 1st floor, to the right of the water.

`That was a close call! The far end of the lock connects to Building #3. Go out of Building #2. Arnold has the card to the door. You can defeat Arnold with a rocket launcher.'

Prisoner #20: Building 5, immediately inside the entrance.

Prisoner #21, Building 2, 2nd floor, 1 screen left from the elevator that moves down.

`That was a close call! Can't cross the desert without a compass!'

Prisoner #22, Building 2, 2nd floor, 1 screen right of Arnold.

`That was a close call! Try contacting resistance fighter "Jennifer" on waveband 12048. Jennifer can give you direct support. But be careful. She's a snob. She probably won't answer you unless you are pretty classy!'

--- [9] FUTURE VERSIONS? -----

Although I think this guide is reasonably complete, there are still a few things I would like to clear up at some point, if possible. If I ever receive any e-mail about this guide, I will almost certainly make a future version; otherwise, I will probably not.

Here are some of the questions I may try to answer in a future version.

-Do the "XXXXXXXXXXXX" digits actually do anything? Do any of them count toward the number of prisoners rescued, for rank promotion purposes?

-How many prisoner rescues do Dr. Pettrovich, Ellen, and the two prisoners behind Coward Duck count for? (Normally rescuing five prisoners entitles you to an extra star of rank.)

-Are there any passwords that the game rejects that I have not listed in Section 6?

-Could any of the sections or explanations be made clearer?

-Did I miss anything that readers would like to see?

--- [10] THANKS/ACKNOWLEDGEMENTS -----

I would like to thank Ultra for bringing us the game Metal Gear, which is quite fun in itself and has spawned several enormously successful sequels. I would also like to thank my brothers Brian and Kevin, who suggested to me the idea of "cracking" games' password systems, and have provided me with endless intellectual inspiration in general. I would like to thank CJayC, maintainer of GameFAQS.com, the finest source for video game information available anywhere. Finally, I would like to thank you, the reader, for looking over this guide. Once again, it is my hope that you found it interesting; if you did, I would love to hear from you at [doug.babcock@gmail.com](mailto:doug.babcock@gmail.com).

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