Cookie Parser by Using Network Hacking

쿠키 인증을 통한 로그인 세션 가로채기

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Cookie 란?

Cookie 란?

- HTTP
  - HTTP는 Stateless 한 Protocol 로 Session이 끊어지면 현재 연결된 Login 정보 등을 상실

- Cookie
  - 따라서, HTTP 통신에서 로그인 정보 등을 저장하기 위해 사용되는 것이 Cookie로 인터넷 통신시 Cookie라는 특정한 값이 전송되어 특정한 사용자로 인증 되는 방식

Web Site의 Cookie 인증 방식

Web Site의 Cookie 인증 방식

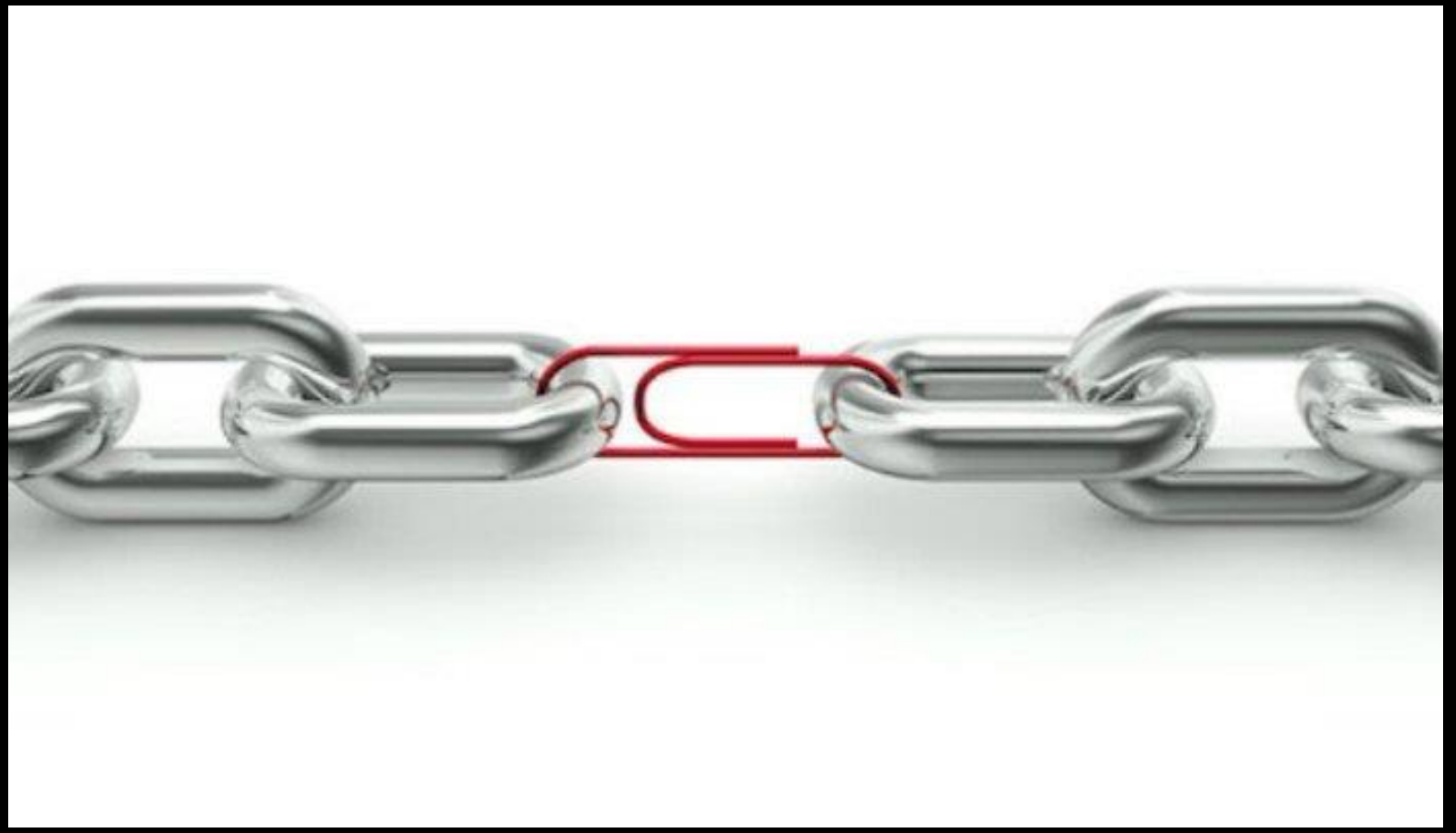
Web Site의 Cookie 인증 방식

```
GET / HTTP/1.1
Accept: text/html, application/xhtml+xml, image/jxr, */*
Accept-Language: ko-KR
User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; rv:11.0) like Gecko
Accept-Encoding: gzip, deflate
Host: www.naver.com
Connection: Keep-Alive
Cookie: NM_THEMECAST_NEW=tcc_bty%2Ctcc_fod%2Ctcc_lif; PM_CK_latestPanelDate=20170921; PM_CK_readNewPanel=ANIMAL%3BWEDDING%3BITTECH;
npic=7jjf4tm4TLbQNIm4EwTkP4DP/BG42oB2LY4tuWjjWrPdEavNLZNXLiG4kpE/nkrHCA==; NNB=DHOZCXYSVKEVO; ASID=b761a18c000001593ba61e3900000052;
_ga=GA1.2.1414891810.1493977526; nx_ssl=2; nid_inf=-785374642; NID_AUT=3Drr0UntMnlme5iN2rfQYcYCowZ8Xk/o2d+G9gUD49JJOLor8E7wIqkbez1onDJU;
NID_SES=AAABfKeJYiFArFJ7hFKq3MhIoB1PJC+uFm7IiRE3kCgwGJ539XGc41K/3UbM8vjgSvPzxaEutixn3Hj+hyq8y5JzYfnKrtcabwYOTY/1wFV5+2o9a9ehLnFLi
+vNZDuMMswCtWKvuC2nw6rzY325xAUOZJmNEMDcGaqlsqCxbSAtsvd1e1z0twIa7A8/11Jc2yBmI/qLMcpIsOg3sRlNsnDS+yTklFuYr7NmQb61CFIszLIn12Hh/BD196RocPUEJQ
+H4hqd4XfS0FtM0Qmu9rfBXV9n7gv1twSVEW5Mh5hkDXF7QGCfzHXIKgL827aOCKUqhpQdmlCKvwLGUS5D07eftTMD3Vzt93DtEfKZ5xA49XviZdDm27OikjYOxuiA5DhFGcFecWafS77xqB1izeJO6CvmvE
gGA6tgh0zOkjAkSmblHQTEnFDAQjH9NgC8u9YXCxsX/z5Idu5MJPCizKvt1YR5NdP1BilKUqCqSDVheOOh+F/e+dwoWi/cn4TPcHPKVw==
```

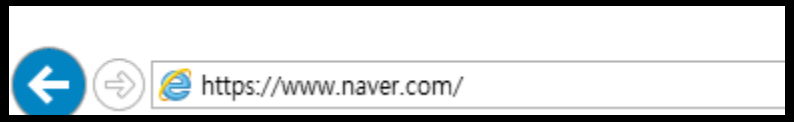
```
GET / HTTP/1.1
Accept: text/html, application/xhtml+xml, image/jxr, */*
Accept-Language: ko-KR
User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; rv:11.0) like Gecko
Accept-Encoding: gzip, deflate
Host: daum.net
Connection: Keep-Alive
Cookie: TIARA=yt2jsGzABC1xsDpLnIb5XmwiW3E2mstYRBJnmiY7yzsli.V9SkYBSYc8Nyi_lhM_6MZmaGl4XkITp_tvu3EG-5lpybn2O7cE;
webid=yJxkclrTZndMoaxJ007s7jpZipHEjo2Fv0CwaDsPrDBfCRWe0azmTpmc3jd4QI/X; webid_sync=1511058237138; AGEN=I4a95QlGObCDLlAwkjrNP4AaXJKnDGrrI9bpiM_lmMk;
SLEVEL=1; TS=1511058245; HTS=KUg1z.6xOPSjY3U5IwZ8bg00; HM_CU=58LJ6M8HDxA; PROF=0603012032024064024120UiQPJk7X-6w0mlxoempuua-
JbjPOymlsUoOa8X8AUpy.KuZP3z7wEl2W4..NYhR74w00LYYSA9A1_cGNLCyhCzrwOgyiAbNDcmXx3lVb26yxIdFExAQ9BjPTVjje18Lmp9GFfIauQ1o8OTLLnHHY.bHDTw005.D3F1Q7ttIGSDMyc2OZQZI
t5MtQdMNgRWkqd_7J.HUt6lQfwCuqFc8f..__DCEM2OD8V-.8.En9Aas1ATS5nrw_ToEHgBeukyAk8MXUQj3qhrIYsAISFQ00; LSID=d04d663b-a860-48db-8f34-b705bdacfbc21511058245493
```

Web Site의 취약점

취약점



Web Site의 취약점(일반 접속시)




```
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...2........
www.naver.com..........
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...}.A.c.W.<.oMYp.C.x..f.N.+.6...7p...
.B...$.../.D(..k.`..o.b9.zLs...HW .x.m........(.......h2.http/1.1.........
.............J...F...|.&..dd.B.....%.....Z!.S.j......./.................#.............h2..............10..-0............B...w.E.o.*...70
.        *.H..
.....0..1.0         ..U....GB1.0...U....Greater Manchester1.0...U....Salford1.0...U.
..COMODO CA Limited1<0:..U...3COMODO RSA Organization Validation Secure Server CA0..
1704120000000Z.
1905012359595Z0...1.0          ..U....KR1.0...U....135611.0...U....Gyeonggi-do1.0...U....Seongnam-si1#0!..U.   ..6, Buljeong-ro, Bundang-gu1.0...U.
..NAVER Corp.1"0 ..U....Information Security Team1@0>..U...7Hosted by Korea Information Certificate Authority, Inc.1.0...U....SGC SSL
Wildcard1.0...U....*.www.naver.com0.."0
.        *.H..
.........0..
......QR.OX.........vBp&.5.2YE.....=..C-...%...HO.7..O/\%.hN.+.lu.U.....MD6..^..tD..f..7..r(.cJ;.TeGYgK.$.;
.H....d4z..B..7.:.......^.G.2...,M..x.&.....l....J=Z&|].....*...<WT.F......H9.......B........6h>z....>....tDO....3.7...R.;..#.:J_ ze.'...,....d.. ...=
%............0...0...U.#..0.....+...O./.*HH*...B.$0...U.......C...t.X..P...     ..H..0...U...........0...U.......0.0...U.%..0...+.........+.......0P..U.
.I0G0;..+.....1.....0+0)..+.........https://secure.comodo.com/CPS0...g.....0Z..U...S0Q0O.M.K.Ihttp://crl.comodoca.com/
COMODORSAOrganizationValidationSecureServerCA.crl0....+.........0}0U..+.....0..Ihttp://crt.comodoca.com/
COMODORSAOrganizationValidationSecureServerCA.crt0$..+.....0...http://ocsp.comodoca.com0)..U..."0 ..*.www.naver.com.
www.naver.com0
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..........7..v_....3........$...].-sz_......II.,*......RL.~3....3.B...r2s.o.... .dJ.....v..$G'.soK.+.d....]..,eJ=..0..V(.=7...Pu...R....wsW?]..
G...J...e.W<3E...$+..L4.......NB5...d|..l..N.A..}..c.8d....~k.....<. .!.x..{%".....Z..[.#..GT\..-.....^.....GVon.a
.........0...0..........6.^.....~..sk.<.0
```
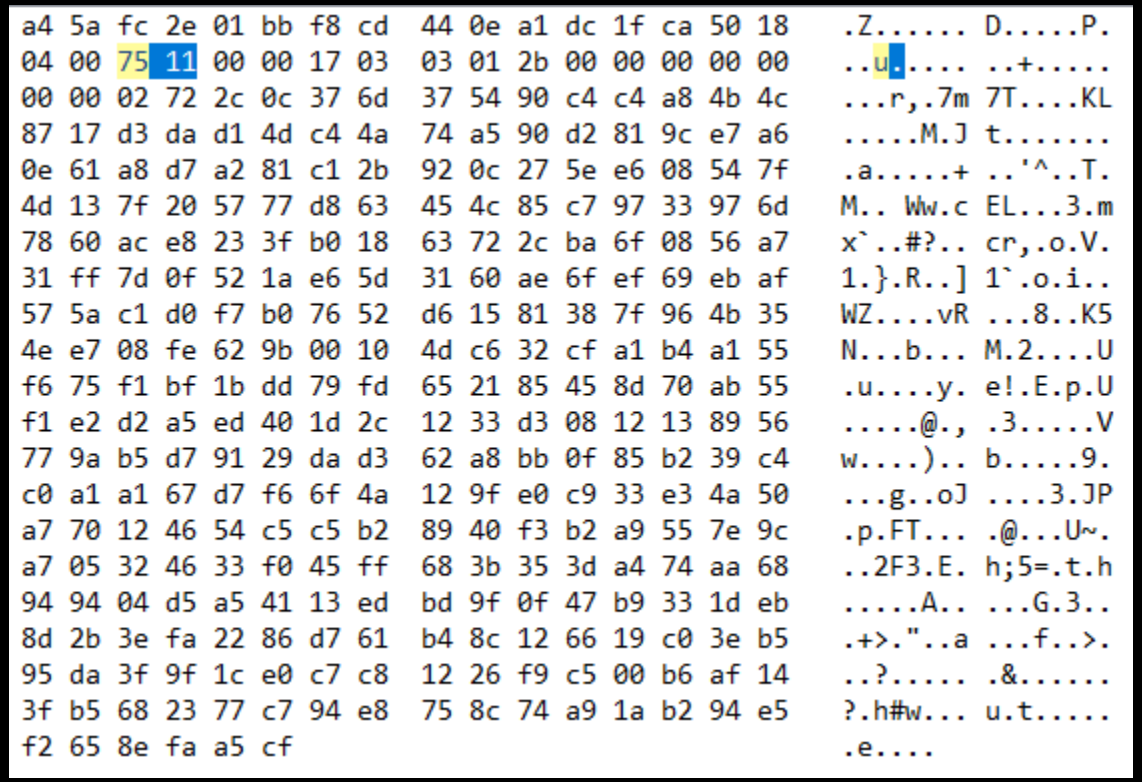

Web Site의 취약점(일반 접속시)

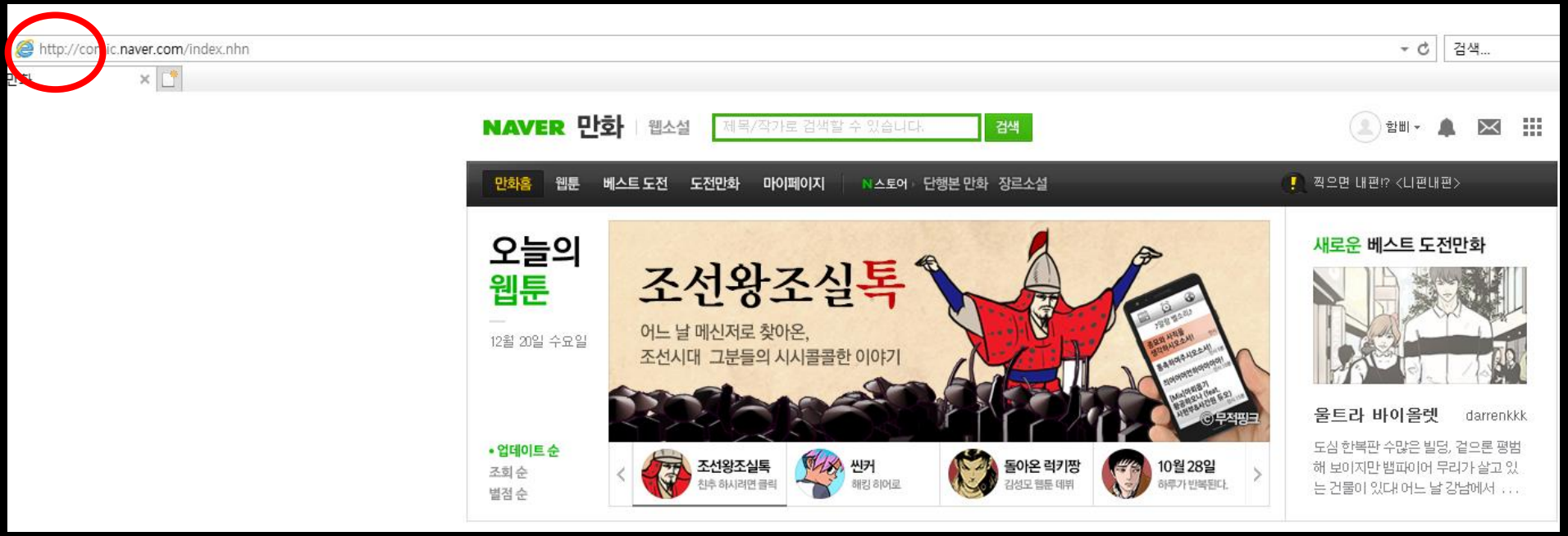
- 코드가 암호화 되어 통신



```
a4 5a fc 2e 01 bb f8 cd  44 0e a1 dc 1f ca 50 18   .Z...... D.....P.
04 00 75 11 00 00 17 03  03 01 2b 00 00 00 00 00   ..u..... ..+.....
00 00 02 72 2c 0c 37 6d  37 54 90 c4 c4 a8 4b 4c   ...r,.7m 7T....KL
87 17 d3 da d1 4d c4 4a  74 a5 90 d2 81 9c e7 a6   .....M.J t.......
0e 61 a8 d7 a2 81 c1 2b  92 0c 27 5e e6 08 54 7f   .a.....+ ..'^..T.
4d 13 7f 20 57 77 d8 63  45 4c 85 c7 97 33 97 6d   M.. Ww.c EL...3.m
78 60 ac e8 23 3f b0 18  63 72 2c ba 6f 08 56 a7   x`..#?.. cr,.o.V.
31 ff 7d 0f 52 1a e6 5d  31 60 ae 6f ef 69 eb af   1.}.R..] 1`.o.i..
57 5a c1 d0 f7 b0 76 52  d6 15 81 38 7f 96 4b 35   WZ....vR ...8..K5
4e e7 08 fe 62 9b 00 10  4d c6 32 cf a1 b4 a1 55   N...b... M.2....U
f6 75 f1 bf 1b dd 79 fd  65 21 85 45 8d 70 ab 55   .u....y. e!.E.p.U
f1 e2 d2 a5 ed 40 1d 2c  12 33 d3 08 12 13 89 56   .....@., .3.....V
77 9a b5 d7 91 29 da d3  62 a8 bb 0f 85 b2 39 c4   w....).. b.....9.
c0 a1 a1 67 d7 f6 6f 4a  12 9f e0 c9 33 e3 4a 50   ...g..oJ ....3.JP
a7 70 12 46 54 c5 c5 b2  89 40 f3 b2 a9 55 7e 9c   .p.FT... .@...U~.
a7 05 32 46 33 f0 45 ff  68 3b 35 3d a4 74 aa 68   ..2F3.E. h;5=.t.h
94 94 04 d5 a5 41 13 ed  bd 9f 0f 47 b9 33 1d eb   .....A.. ...G.3..
8d 2b 3e fa 22 86 d7 61  b4 8c 12 66 19 c0 3e b5   .+>."..a ...f..>.
95 da 3f 9f 1c e0 c7 c8  12 26 f9 c5 00 b6 af 14   ..?..... .&......
3f b5 68 23 77 c7 94 e8  75 8c 74 a9 1a b2 94 e5   ?.h#w... u.t.....
f2 65 8e fa a5 cf                                  .e....
```

Web Site의 취약점

- 네이버에서 웹툰 메뉴 클릭시(취약점)



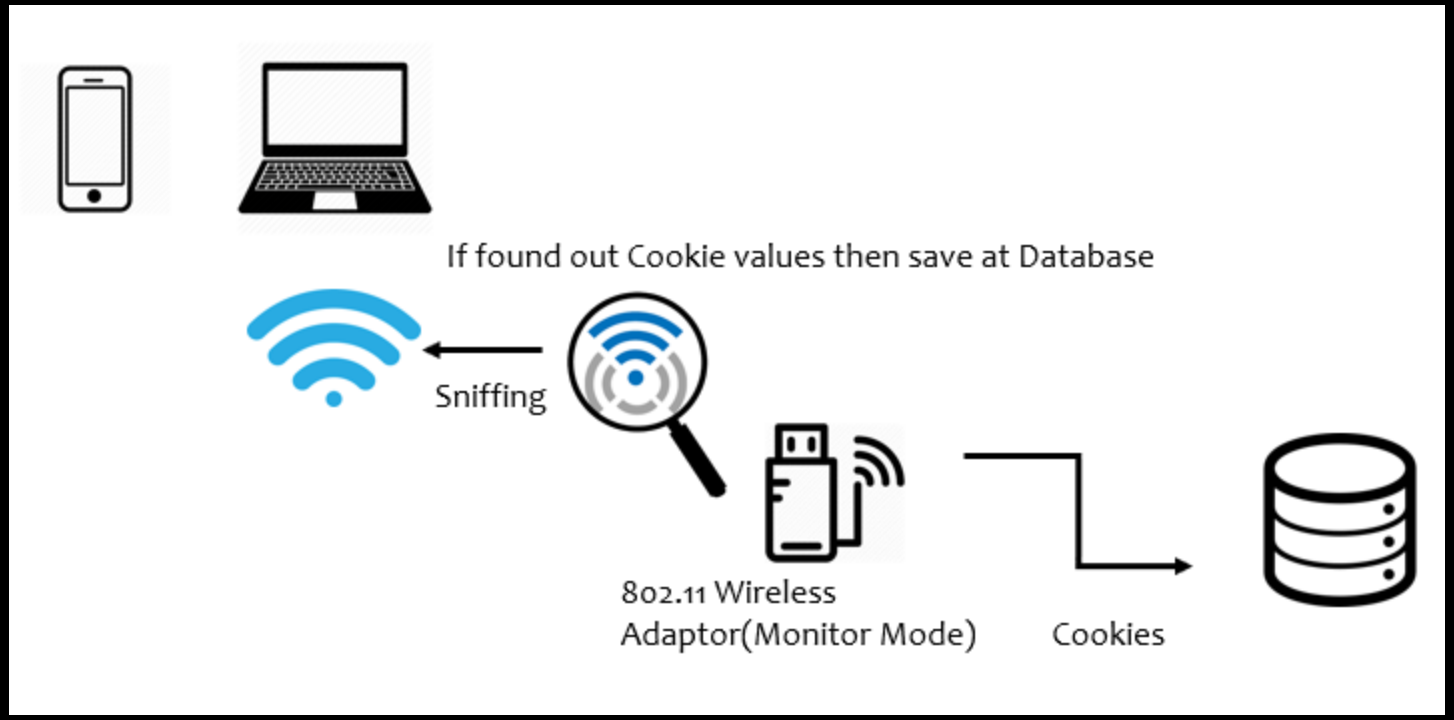
Web Site의 취약점

- 네이버에서 웹툰 메뉴 클릭시(취약점)

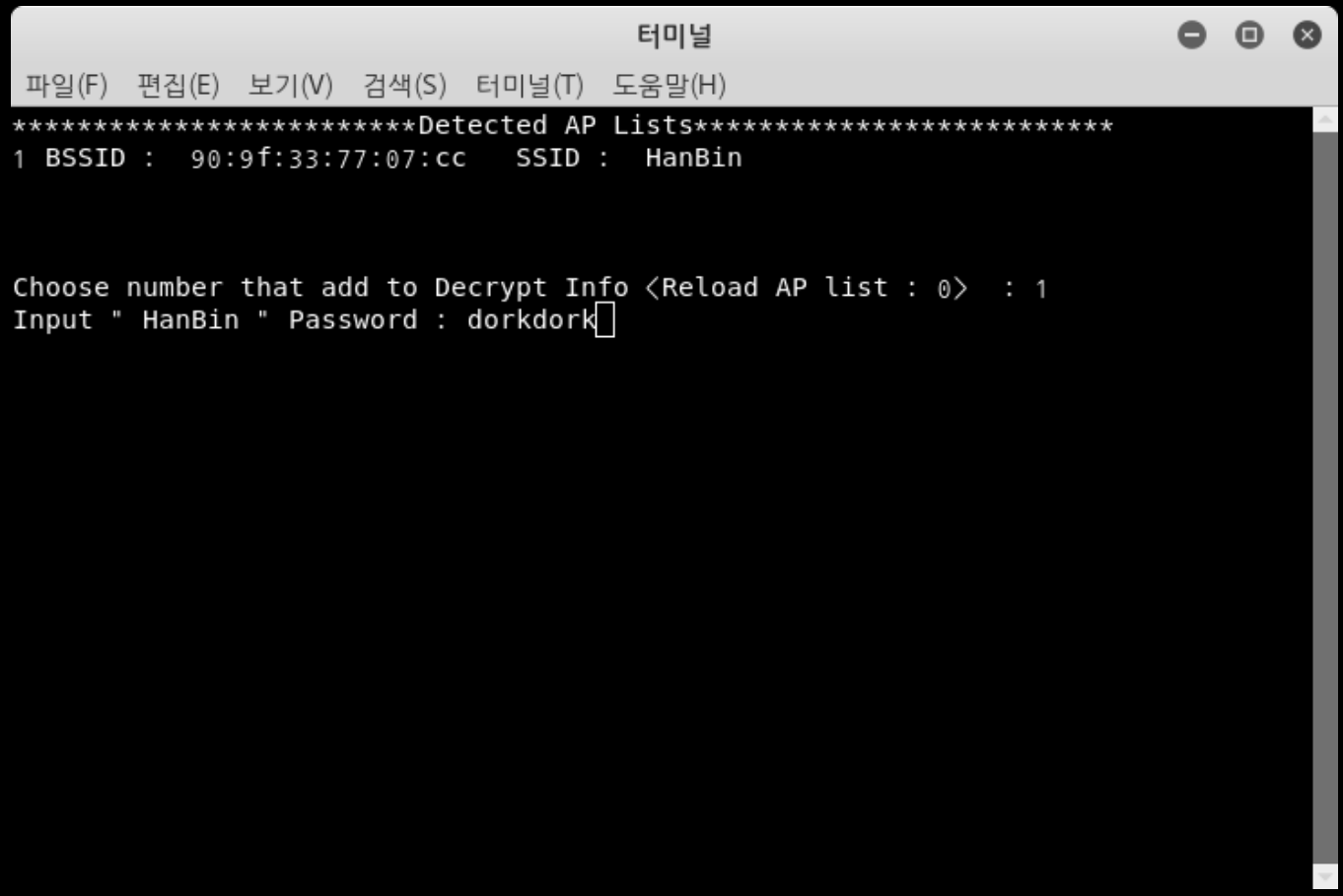
```
GET / HTTP/1.1
Accept: text/html, application/xhtml+xml, image/jxr, */*
Accept-Language: ko-KR
User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; rv:11.0) like Gecko
Accept-Encoding: gzip, deflate
Host: www.naver.com
Connection: Keep-Alive
Cookie: NM_THEMECAST_NEW=tcc_bty%2Ctcc_fod%2Ctcc_lif; PM_CK_latestPanelDate=20170921; PM_CK_readNewPanel=ANIMAL%3BWEDDING%3BITTECH;
npic=7jjf4tm4TLbQNIm4EwTkP4DP/BG42oB2LY4tuWjjWrPdEavNLZNXLiG4kpE/nkrHCA==; NNB=DHOZCXYSVKEVO; ASID=b761a18c000001593ba61e3900000052;
_ga=GA1.2.1414891810.1493977526; nx_ssl=2; nid_inf=-785374642; NID_AUT=3Drr0UntMnlme5iN2rfQYcYCowZ8Xk/o2d+G9gUD49JJOLor8E7wIqkbez1onDJU;
NID_SES=AAABfKeJYiFArFJ7hFKq3MhIoB1PJC+uFm7IiRE3kCgwGJ539XGc41K/3UbM8vjgSvPzxaEutixn3Hj+hyq8y5JzYfnKrtcabwYOTY/1wFV5+2o9a9ehLnFLi
+vNZDuMMswCtWKvuC2nw6rzY325xAUOZJmNEMDcGaqlsqCxbSAtsvd1e1z0twIa7A8/11Jc2yBmI/qLMcpIsOg3sRlNsnDS+yTklFuYr7NmQb61CFIszLIn12Hh/BD196RocPUEJQ
+H4hqd4XfS0FtM0Qmu9rfBXV9n7gv1twSVEW5Mh5hkDXF7QGCfzHXIKgL827aOCKUqhpQdmlCKvwLGUS5D07eftTMD3Vzt93DtEfKZ5xA49XviZdDm27OikjYOxuiA5DhFGcFecWafS77xqB1izeJO6CvmvE
gGA6tgh0zOkjAkSmblHQTEnFDAQjH9NgC8u9YXCxsX/z5Idu5MJPCizKvt1YR5NdP1BilKUqCqSDVheOOh+F/e+dwoWi/cn4TPcHPKVw==
```

취약점을 이용한
Cookie Parser 만들기

동작 방식


If found out Cookie values then save at Database
Sniffing
802.11 Wireless
Adaptor(Monitor Mode)
Cookies

프로그램 동작 화면


터미널
파일(F) 편집(E) 보기(V) 검색(S) 터미널(T) 도움말(H)
**********Detected AP Lists**********
1 BSSID : 90:9f:33:77:07:cc SSID : HanBin
Choose number that add to Decrypt Info <Reload AP list : 0> : 1
Input " HanBin " Password : dorkdork

인증에 사용되는 Cookie Values

*.naver.com

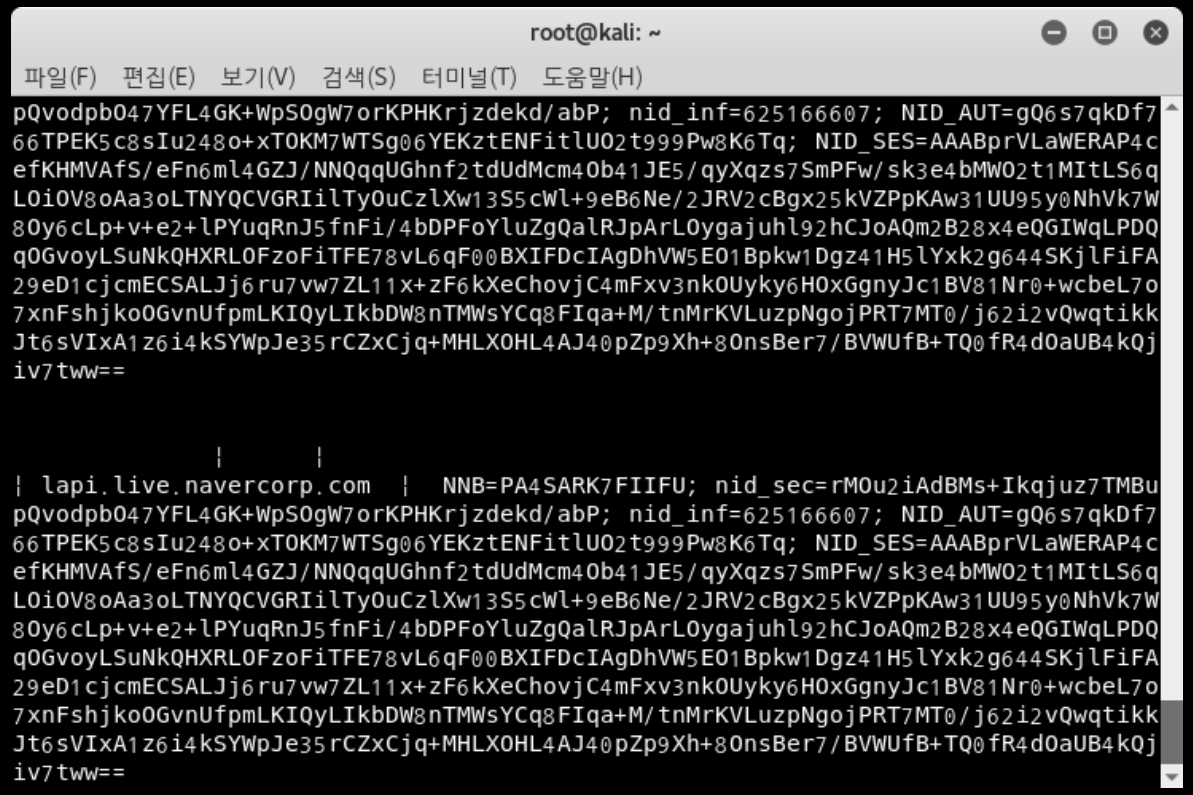
- NID_SES
- NID_AUT

*.daum.net

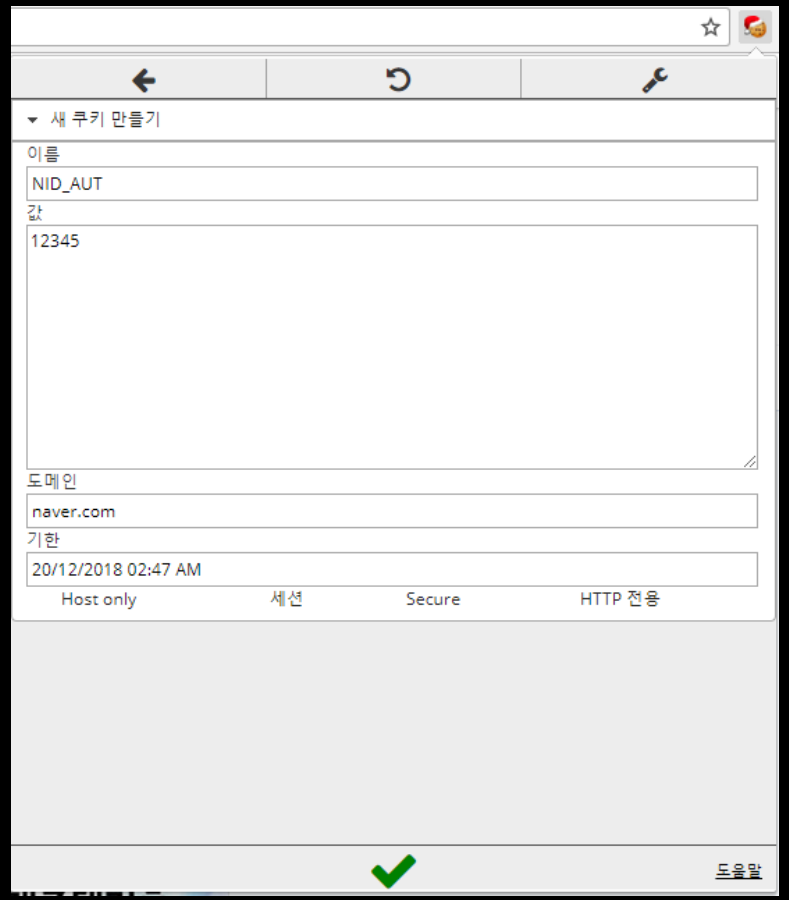
- TS
- PROF
- HTS
- HM_CU

프로그램 동작 화면

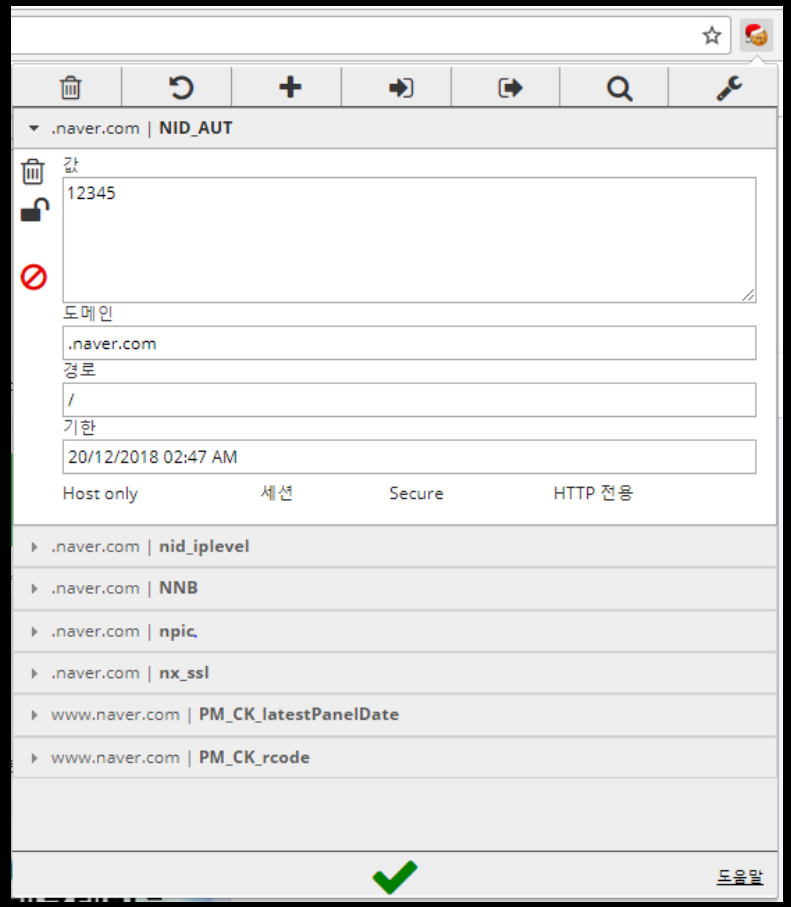
- Cookie가 탐지되면 자동으로 DB에 저장



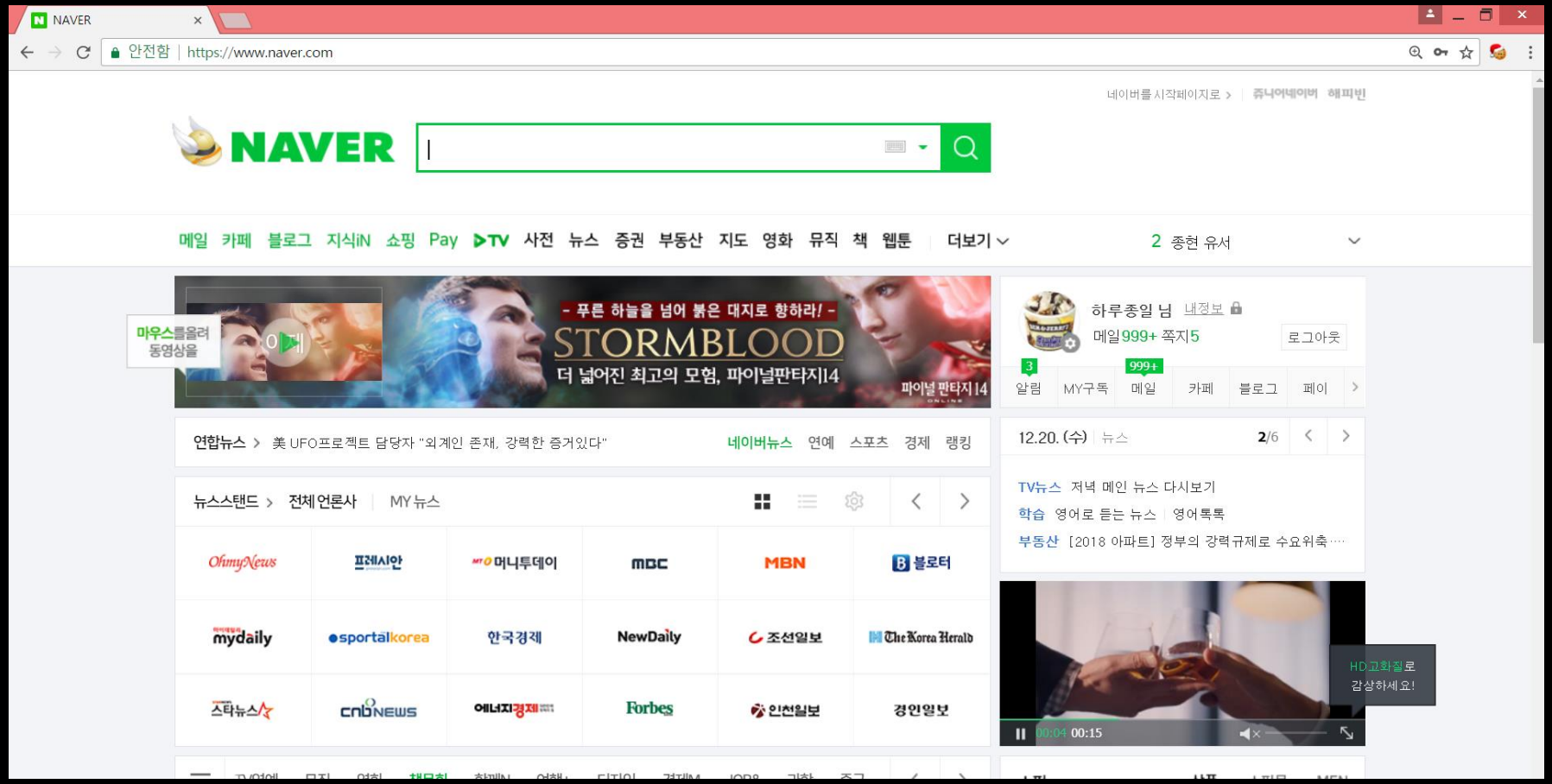
EditCookie를 이용한 Cookie 조작



EditCookie를 이용한 Cookie 조작



Cookie 탈취를 통한 Login



개선방안

개선 방안

- Web Service 사용시 일부만 보안통신(SSL)을 이용하는 것이 아닌 모두 보안 통신을 이용할 것
  - 예) HSTS(HTTP Strict Transport Security)

- 쿠키 인증 정보를 고정된 값으로 사용하는 것이 아닌 난수화 시켜 해당 Cookie등의 정보를 Sniffing하더라도 사용할 수 없도록 개선
  - 예) RTA(Randomized Token Authentication)

향후 계획

향후 계획

- Wireless의 보안이 아주 많이 취약
  - Wireless(특히, WPA2방식)에서 보안을 높일 수 있는 연구 계획 중
  - WPA2의 Key-exchange를 인증을 통해 저장한 Key를 사용하도록 WPA2 인증방식을 수정

- EditThisCookie(Chrome Plugin)를 이용하는 것이 아닌 Web을 이용해 Database data를 정렬하고 Parsing한 Cookie 값을 통해 쉽게 인증이 가능하도록 웹의 형태로 서비스 구축
  - 일반 사용자가 쉽게 사용할 수 있게 끔 제작하여 Cookie Parsing에 대한 심각성을 알림

Q&A