

BİLGİ İŞLEM

MSGSU FİZİK BÖLÜMÜ

DERS 7

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MSGSU FİZİK BÖLÜMÜ

AWK

Awk programlama dili C sitili formatlı dosyalarla iş yapabilmeyi sağlayan ufak bir programlama dilidir.

```
[feryal]->awk '{ print }' /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
```

Awk ta, \$0 değişkeni var olan bütün satırı temsil eder

Üsteki komutla aynı sonucu verir

```
[feryal]->awk '{ print $0 }' /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-timesync:x:100:102:systemd Time Synchronization,,,:/run/systemd:/bin/false
systemd-network:x:101:103:systemd Network Management,,,:/run/systemd/netif:/bin/false
```


-F opsiyonu bize ":" kelimeler arasında ayırıcı olarak kullanıldığını belirtir. awk çalıştığında print \$1 komutu bize her satırdaki ilk alanı ekrana basar (: ayrılan kelimeler/alanları)

```
[ferya]->awk -F":" '{ print $1 }' /etc/passwd  
root  
daemon  
bin  
sys  
sync  
games  
man  
lp  
mail  
news  
uucp  
proxy  
www-data  
backup  
list  
irc  
gnats  
nobody  
systemd-timesync  
systemd-network  
systemd-resolve  
systemd-bus-proxy  
syslog
```

```
[ferya]->awk -F":" '{ print $1 " " $3 }' /etc/passwd  
root 0  
daemon 1  
bin 2  
sys 3  
sync 4  
games 5  
man 6  
lp 7  
mail 8  
news 9  
uucp 10  
proxy 13  
www-data 33  
backup 34  
list 38  
irc 39  
gnats 41  
nobody 65534  
systemd-timesync 100  
systemd-network 101  
systemd-resolve 102  
systemd-bus-proxy 103  
syslog 104
```

1 ve 3.
bileşenleri
ekrana bastık

```
[ferya]->awk -F":" '{ print "username: " $1 "\t\tuid:" $3 }' /etc/passwd
username: root          uid:0
username: daemon       uid:1
username: bin           uid:2
username: sys           uid:3
username: sync          uid:4
username: games         uid:5
username: man           uid:6
username: lp            uid:7
username: mail          uid:8
username: news          uid:9
username: uucp          uid:10
username: proxy         uid:13
username: www-data      uid:33
username: backup        uid:34
username: list          uid:38
username: irc           uid:39
username: gnats         uid:41
username: nobody        uid:65534
username: systemd-timesync uid:100
username: systemd-network uid:101
username: systemd-resolve uid:102
username: systemd-bus-proxy uid:103
username: syslog        uid:104
username: _apt          uid:105
username: messagebus    uid:106
username: uidd          uid:107
username: ntp           uid:108
username: avahi-autoipd uid:109
```

Awk ile komut satırından çalıştırmak yerine hazırladığımız scriptimizi çalıştırabiliriz

```
awk -f myscript.awk myfile.in
```

Ornek script:

```
BEGIN { FS=":" }
{ print $1 }
```

BEGIN Bloğu

girdi dosyasını işlemeye başlamadan önce yapılacak tanımlamaları işlemleriyapmamızı sağlar

END Bloğu : Girdi dosyası üzerinde yapılan işlemler bittiğinde yapılmak istenen işlemlerin tanımlanabileceği kısımdır

```
sutuntopla.awk:  
#!/usr/bin/awk -f  
BEGIN {sum=0}  
{sum=sum+$5}  
END {print sum}
```

```
[ferya]->ls -l > inputfile.in  
[ferya]->more inputfile.in  
total 312  
-rwxr-xr-x 1 ferya ferya 437 Dec 6 11:49 awk1.sh  
-rwxr-xr-x 1 ferya ferya 91 Dec 6 11:53 awk2.sh  
-rwxr-xr-x 1 ferya ferya 1075 Nov 30 19:30 chessboard2.sh  
-rwxr-xr-x 1 ferya ferya 411 Nov 30 19:25 chessboard.sh  
-rw-r--r-- 1 ferya ferya 146 Dec 8 02:05 commands.awk  
-rw-r--r-- 1 ferya ferya 487 Dec 8 01:58 func.awk  
-rwxr-xr-x 1 ferya ferya 214 Dec 1 10:41 icicefor.sh  
-rwxr-xr-x 1 ferya ferya 395 Dec 1 10:41 iciceif.sh  
-rw-r--r-- 1 ferya ferya 0 Dec 8 02:25 inputfile.in  
-rwxr-xr-x 1 ferya ferya 881 Nov 30 19:48 menu.sh  
-rw-r--r-- 1 ferya ferya 0 Nov 30 19:48 menuui  
-rw-r--r-- 1 ferya ferya 30 Dec 6 12:30 myscript.awk  
-rw-r--r-- 1 ferya ferya 125 Dec 6 11:54 notlar.txt  
-rwxr-xr-x 1 ferya ferya 372 Nov 30 19:36 select.sh  
-rw-r--r-- 1 ferya ferya 63 Dec 8 02:25 sutuntopla.awk  
-rwxr-xr-x 1 ferya ferya 161 Nov 30 19:34 until.sh  
-rwxr-xr-x 1 ferya ferya 229 Nov 30 18:48 while2.sh  
-rwxr-xr-x 1 ferya ferya 229 Nov 30 18:50 while3.sh  
-rwxr-xr-x 1 ferya ferya 174 Nov 30 19:17 whileio.sh  
-rwxr-xr-x 1 ferya ferya 174 Nov 30 18:43 while.sh  
[ferya]->awk -f sutuntopla.awk inputfile.in  
5694  
[ferya]->
```

Yandaki komutta notlar.txt dosyası icinde arama yapıp bulunan sonuçları sayabiliriz

```
[ferya]->awk '/y/{++cnt} END {print "Count = ", cnt}' notlar.txt
Count = 3
[ferya]->more notlar.txt
1) Amit      Physics    80
2) Rahul     Maths     90
3) Shyam     Biology   87
4) Kedar     English   85
5) Hari      History   89
[ferya]->
```

Standard AWK Değişkenleri

ARGC: arguman sayisini verir

ARGV: argumanlari tasiyan dizini belirtir

CONVFMT: sayilar icin donusum formatini gosterir on tanimli degeri%.6g.

ENVIRON:environment degişkenlerini verir

FILENAME: Dosya ismini verir

FS: Alan ayiraclarinin belirtir

NF: Var olan kayittaki alan sayisini belirtir

NR:

```
[ferya]->awk 'BEGIN {print "FS = " FS}' notlar.txt
FS =
[ferya]->awk 'END {print FILENAME}' notlar.txt
notlar.txt
[ferya]->awk 'BEGIN { print "Conversion Format =", CONVFMT }'
Conversion Format = %.6g
[ferya]->awk 'BEGIN { print ENVIRON["USER"] }'
ferya
[ferya]->awk 'BEGIN {
  for (i = 0; i < ARGC - 1; ++i) {
    printf "ARGV[%d] = %s\n", i, ARGV[i]
  }
}' one two three four
ARGV[0] = awk
ARGV[1] = one
ARGV[2] = two
ARGV[3] = three
[ferya]->echo -e "One Two\nOne Two Three\nOne Two Three Four" | awk 'NF > 2
>'
One Two Three
One Two Three Four
[ferya]->echo -e "One Two\nOne Two Three\nOne Two Three Four" | awk 'NR < 3'
One Two
One Two Three
[ferya]->
```

GNU nano 2.5.3

File: myscript.awk

```
BEGIN {FS=":" }  
{ print $1 }
```

```
[ferya]->awk -f myscript.awk /etc/passwd
```

```
root  
daemon  
bin  
sys  
sync  
games  
man  
lp  
mail  
news  
uucp  
proxy  
www-data  
backup  
list  
irc  
gnats  
nobody  
systemd-timesync  
systemd-network  
systemd-resolve  
systemd-bus-proxy  
syslog  
_apt  
messagebus  
uidd  
ntp
```




```
[ferya]->echo -e "cat\nbat\nfun\nfin\nfan" | awk '/f.n/'
fun
fin
fan
[ferya]->echo -e "This\nThat\nThere\nTheir\nthese" | awk '/^The/'
There
Their
[ferya]->echo -e "knife\nknow\nfun\nfin\nfan\nnine" | awk '/n$/ '
fun
fin
fan
[ferya]->echo -e "Call\nTall\nBall" | awk '/[CT]all/'
Call
Tall
[ferya]->echo -e "Call\nTall\nBall" | awk '/[^CT]all/'
Ball
[ferya]->echo -e "Call\nTall\nBall\nSmall\nShall" | awk '/Call|Ball/'
Call
Ball
[ferya]->echo -e "Colour\nColor" | awk '/Colou?r/'
Colour
Color
[ferya]->echo -e "ca\necat\necat" | awk '/cat*/'
ca
cat
ecat
[ferya]->
[ferya]->echo -e "111\n22\n123\n234\n456\n222" | awk '/2+/'
22
123
234
222
```

Array Oluşturma silme

```
[feryal]->awk 'BEGIN {
    fruits["mango"] = "yellow";
    fruits["orange"] = "orange"
    print fruits["orange"] "\n" fruits["mango"]
}'
orange
yellow
[feryal]->awk 'BEGIN {
    fruits["mango"] = "yellow";
    fruits["orange"] = "orange";
    delete fruits["orange"];
    print fruits["orange"]
}'

[feryal]->awk 'BEGIN {
    array["0,0"] = 100;
    array["0,1"] = 200;
    array["0,2"] = 300;
    array["1,0"] = 400;
    array["1,1"] = 500;
    array["1,2"] = 600;

    # print array elements
    print "array[0,0] = " array["0,0"];
    print "array[0,1] = " array["0,1"];
    print "array[0,2] = " array["0,2"];
    print "array[1,0] = " array["1,0"];
    print "array[1,1] = " array["1,1"];
    print "array[1,2] = " array["1,2"];
}'
array[0,0] = 100
array[0,1] = 200
array[0,2] = 300
array[1,0] = 400
array[1,1] = 500
array[1,2] = 600
[feryal]->█
```

```
if (koşul)
{
    action-1
    action-1
    .
    .
    action-n
}
```

```
if (koşul)
    action-1
else
    action-2
```

```
if (koşul)
    action-1
else if
    Action-2
else if
    Action-3
```

```
for (ilkdeğer; koşul; artırma/azaltma)
    action
```

```
[ferya]->awk 'BEGIN {num = 10; if (num % 2 == 0) printf "%d is even number.\n", num }'
10 is even number.
[ferya]->awk 'BEGIN {
>   num = 11; if (num % 2 == 0) printf "%d is even number.\n", num;
>   else printf "%d is odd number.\n", num
> }'
11 is odd number.
[ferya]->awk 'BEGIN {
>   a = 30;
>
>   if (a==10)
>   print "a = 10";
>   else if (a == 20)
>   print "a = 20";
>   else if (a == 30)
>   print "a = 30";
> }'
a = 30
[ferya]->awk 'BEGIN { for (i = 1; i <= 5; ++i) print i }'
1
2
3
4
5
[ferya]->█
```

while (Koşul) action	do action while (Koşul)
-------------------------	-------------------------------

```
[ferya]->awk 'BEGIN {i = 1; while (i < 6) { print i; ++i } }'  
1  
2  
3  
4  
5  
[ferya]->awk 'BEGIN {i = 1; do { print i; ++i } while (i < 6) }'  
1  
2  
3  
4  
5  
[ferya]->awk 'BEGIN {  
>   sum = 0; for (i = 0; i < 20; ++i) {  
>     sum += i; if (sum > 50) break; else print "Sum =", sum  
>   }  
> }'  
Sum = 0  
Sum = 1  
Sum = 3  
Sum = 6  
Sum = 10  
Sum = 15  
Sum = 21  
Sum = 28  
Sum = 36  
Sum = 45  
[ferya]->awk 'BEGIN {  
>   sum = 0; for (i = 0; i < 20; ++i) {  
>     sum += i; if (sum > 50) exit(10); else print "Sum =", sum  
>   }  
> }'  
Sum = 0  
Sum = 1  
Sum = 3  
Sum = 6  
Sum = 10  
Sum = 15  
Sum = 21  
Sum = 28  
Sum = 36  
Sum = 45  
[ferya]->
```

```
function function_name(argument1, argument2, ...) {  
    function gövdesi  
}
```

Örnek:(func.awk)}

```
# Returns minimum number  
function find_min(num1,  
num2){  
    if (num1 < num2)  
        return num1  
    return num2  
}  
# Returns maximum number  
function find_max(num1,  
num2){  
    if (num1 > num2)  
        return num1  
    return num2  
}  
# Main function  
function main(num1, num2)  
{  
    # Find minimum number  
    result = find_min(10,  
20)  
    print "Minimum =",  
result  
  
    # Find maximum number  
    result = find_max(10,  
20)  
    print "Maximum =",  
result  
}  
# Script execution starts  
here  
BEGIN {  
    main(10, 20)  
}
```

```
[ferya]->awk -f func.awk  
Minimum = 10  
Maximum = 20  
[ferya]->|
```

```
Commands.awk:
BEGIN {
    cmd = "tr [a-
z] [A-Z]"
    print "hello,
world !!!" |& cmd
    close(cmd,
"to")

    cmd |& getline
out
    print out;
    close(cmd);
}
```

```
[ferya]->echo "Old data" > /tmp/message.txt
[ferya]->more /tmp/message.txt
Old data
[ferya]->awk 'BEGIN { print "Hello, World !!!" >> "/tmp/message.txt" }'
[ferya]->more /tmp/message.txt
Old data
Hello, World !!!
[ferya]->awk 'BEGIN { print "hello, world !!!" | "tr [a-z] [A-Z]" }'
HELLO, WORLD !!!
[ferya]->pico commands.awk
[ferya]->awk -f commands.awk
HELLO, WORLD !!!
[ferya]->█
```

