If spaces are there in variable names.

Eg:

age → (space) years

if 'age years' n gt 40;

↓

to avoid space

How to define variable ~~names~~ label.

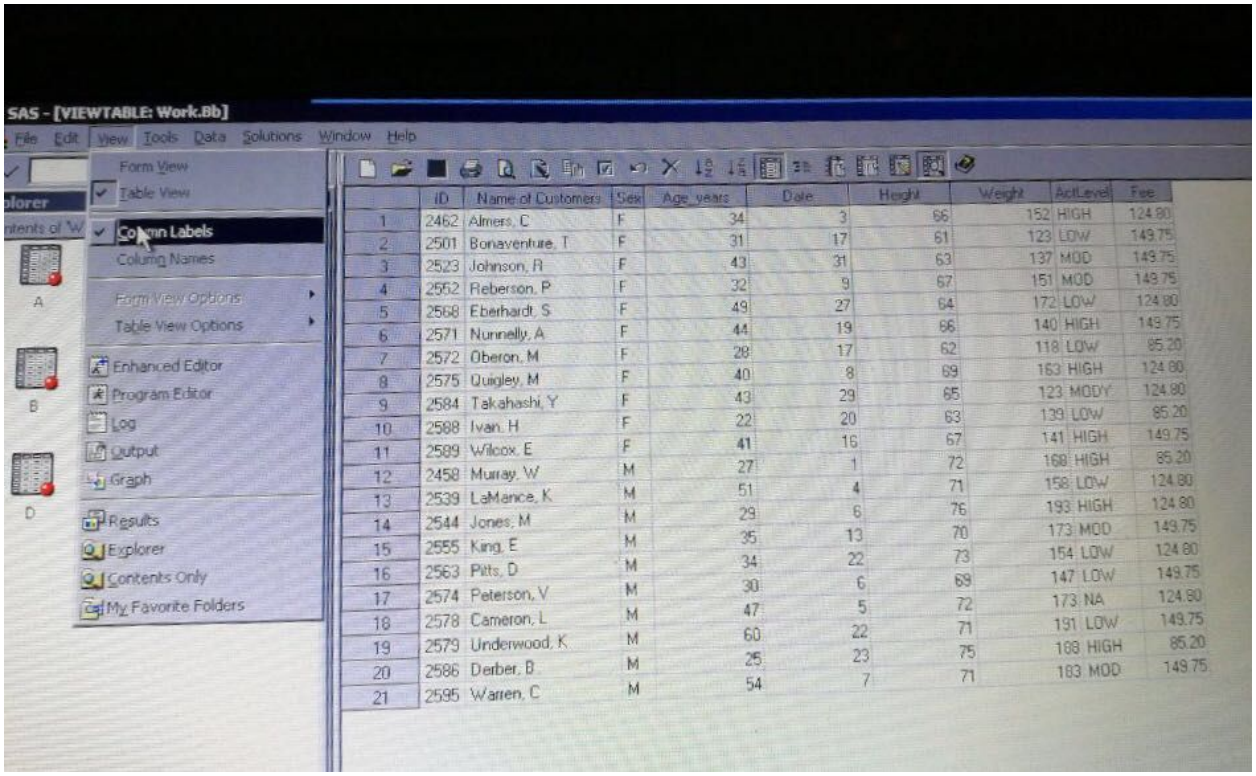
Label is one of the metadata information. It is used to give extra information about the variable.

```
data a;
set sasuser.admit;
label age = "age_years";  → (label statement)
run;
```

Note: If we will open dataset 'a' we will see age variable in the table and if we will go to view and open column names we will see the label name as "age_years".

Another eg:

```
data a;
set sasuser.admit;
label age = "age - years" name = "Name of customer";
run;
```



	ID	Name of Customers	Sex	Age_years	Date	Height	Weight	ActLevel	Fee
1	2462	Almers, C	F	34	3	66	152	HIGH	124.80
2	2501	Bonaventure, T	F	31	17	61	123	LOW	149.75
3	2523	Johnson, R	F	43	31	63	137	MOD	149.75
4	2562	Reberson, P	F	32	9	67	151	MOD	149.75
5	2568	Eberhardt, S	F	49	27	64	172	LOW	124.80
6	2571	Nunnelly, A	F	44	19	66	140	HIGH	149.75
7	2572	Oberon, M	F	28	17	62	118	LOW	85.20
8	2575	Quigley, M	F	40	8	69	163	HIGH	124.80
9	2584	Takahashi, Y	F	43	29	65	123	MODY	124.80
10	2588	Ivan, H	F	22	20	63	139	LOW	85.20
11	2589	Wilcox, E	F	41	16	67	141	HIGH	149.75
12	2458	Murray, W	M	27	1	72	168	HIGH	85.20
13	2539	LaManice, K	M	51	4	71	158	LOW	124.80
14	2544	Jones, M	M	29	6	76	193	HIGH	124.80
15	2555	King, E	M	35	13	70	173	MOD	149.75
16	2563	Pitts, D	M	34	22	73	154	LOW	124.80
17	2574	Peterson, V	M	30	6	69	147	LOW	149.75
18	2578	Cameron, L	M	47	5	72	173	NA	124.80
19	2579	Underwood, K	M	60	22	71	191	LOW	149.75
20	2586	Derber, B	M	25	23	75	188	HIGH	85.20
21	2595	Warren, C	M	54	7	71	183	MOD	149.75

Do loops

Do until

1. Lie → Runs till the condition is false.

2. Last → Checks the condition at last, first it enters the loop.

Do while

1. Runs till the condition is true.

2. first it checks the condition.

```
data a;
p = 100000;
int = .09;
do until (p >= 200000);
p + p * int;
output;
end;
run;
```

It will run till the principal is not greater than 200000.

```
data a;
p = 100000;
int = 0.09;
do while (p <= 200000);
p + p * int;
output;
end;
run;
```

Both the codes will give same o/p. Both are equally efficient. Depends on situation which condition we want to use.

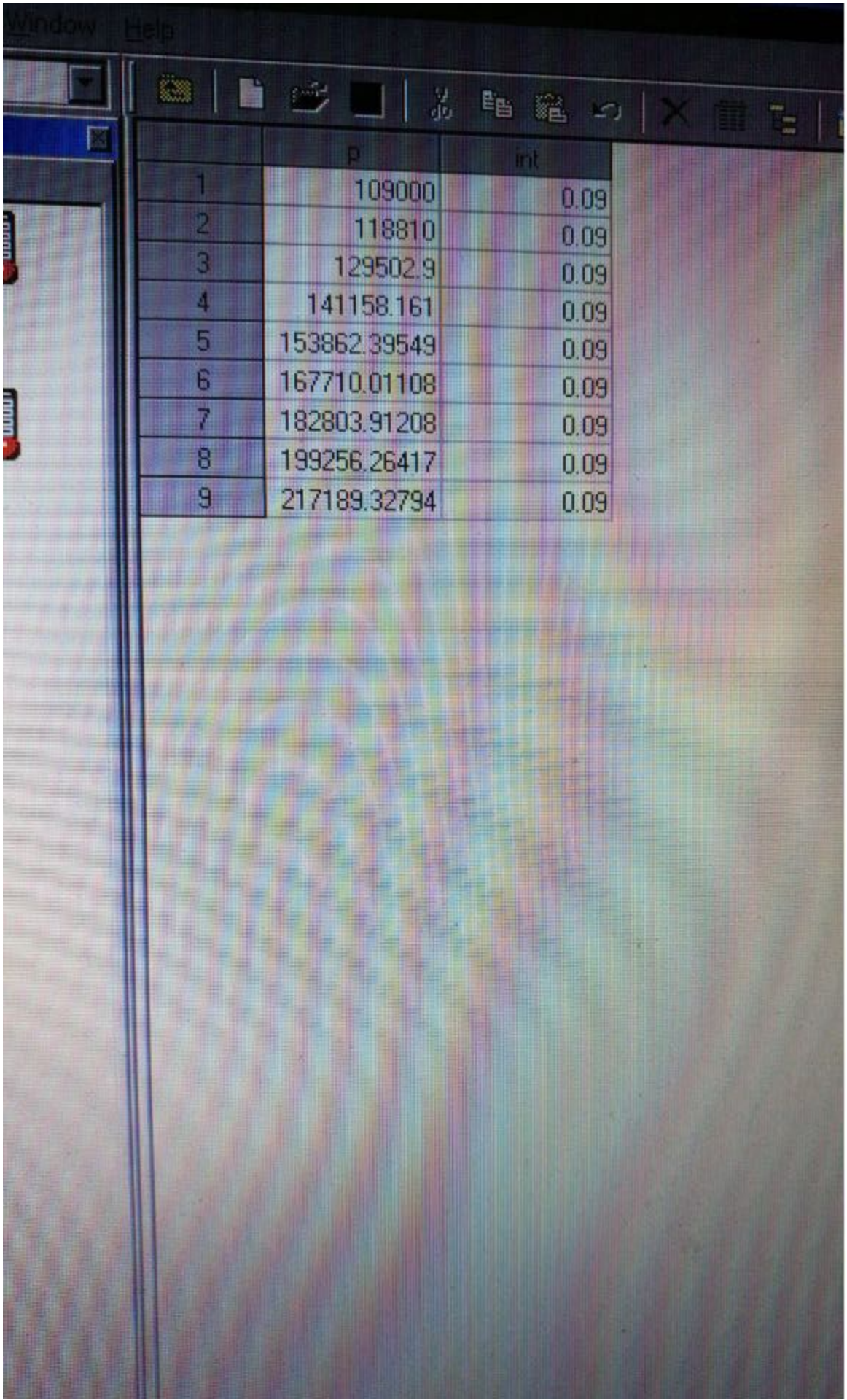
Eg: from 2nd difference

```
data a;
p = 400000;
int = 0.09;
do until (p >= 200000);
p+p*int;
output;
end; run;
```

Here: 4 lakh is greater than 2 lakh. Condition is true. Ideally it should not run even once. But in case of until, it first enters the loop and checks the condition at last.
So, even if the condition is true in first iteration then also it will run atleast one time.

```
data a;
p = 400000;
int = .09;
do while (p<=200000);
p+p*int;
Output;
end;
run;
```

→ Here 4 lakh is greater than 2 lakh. Condition is false. So it will not run even once as it checks the condition first. Hence, it is more safe.



	P	int
1	109000	0.09
2	118810	0.09
3	129502.9	0.09
4	141158.161	0.09
5	153862.39549	0.09
6	167710.01108	0.09
7	182803.91208	0.09
8	199256.26417	0.09
9	217189.32794	0.09

Count the number of words with loop

Total no. of words = 8

```
data a;
x= " my name is amit and i teach sas";
n= 1;
do while (scan ( x, n, " ") ne " " );
n+1;
count = n - 1;
end;
run;
```

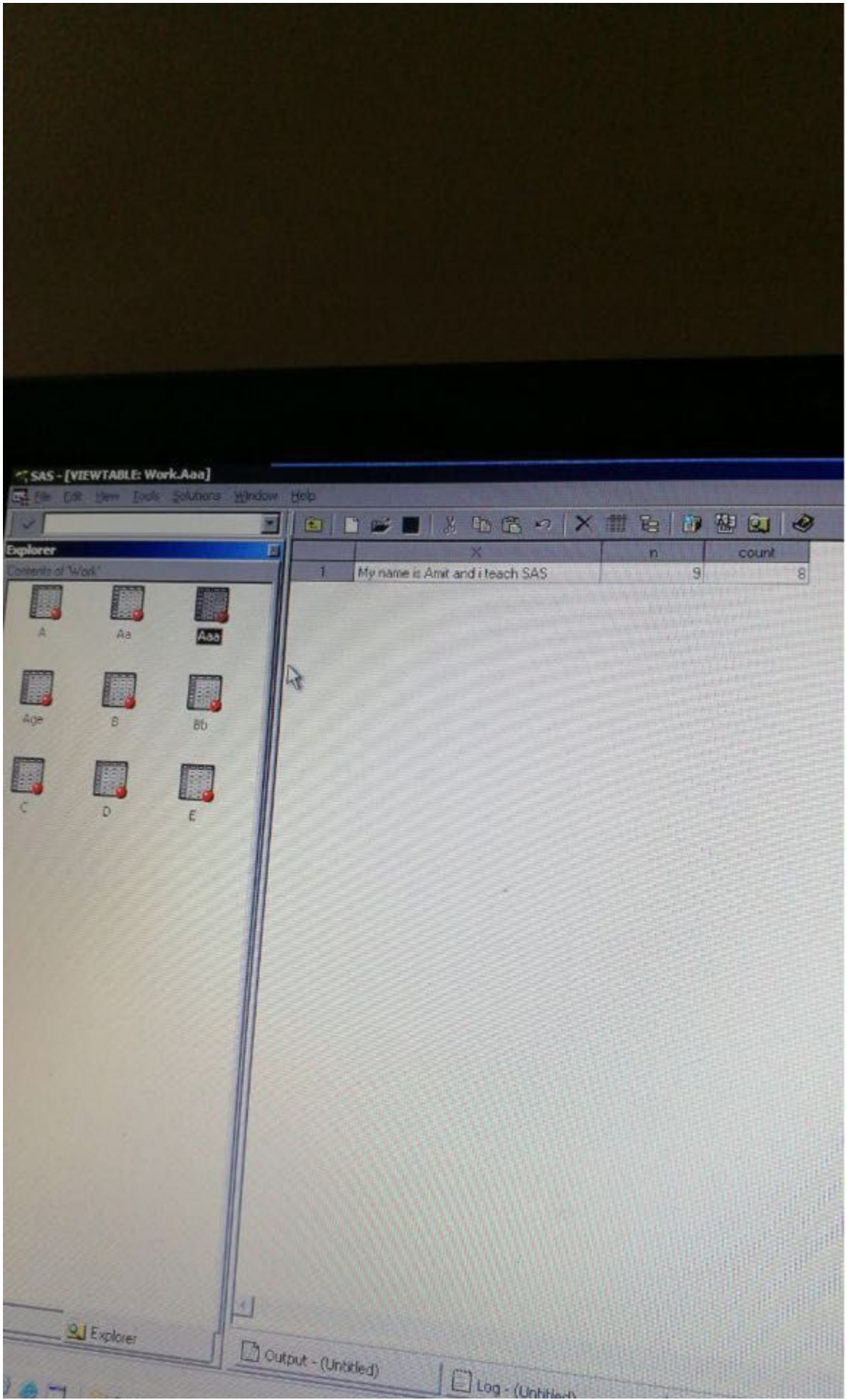
(To get the count as 8)

scan x, value of n will be 1 in 1st iteration. Pick the chunk if it is not equal to blank. Here 'my' is not equal to blank so condition is true and it will move to next iteration.

```
data a;
x= " my name is amit and iteach sas";
n= 0;
do until ( scan x, n, " ") = " ");
n+1;
count = n - 1;
end;
run;
```

In case of until it will go into the loop first and will do 0+1 = 1 and will take the 1st chunk 'my'.

If we will do n=1 in case of n=0 in 3rd line so it will do 1+1=2. and will start reading from 'name' and will skip 'my'.


SAS - [VIEWTABLE: Work.Aaa]
File Edit View Tools Solutions Window Help
Explorer
Contents of 'Work'
A
Aa
Aaa
Age
B
Bb
C
D
E
x
n
count
1
My name is Amit and i teach SAS
9
8
Explorer
Output - (Untitled)
Log - (Untitled)

* Using 'by' can jump the numbers.

```
data a;
do i=1 to 5 by 2
output;
end;
run;
```

→ Numbers will jump by 2.

Output

	i
1	1
2	3
3	5

→ jump by 2

```
data a;
do i = 10 to 5 by -1;
output;
end;
run;
```

Output

	i
1	10
2	9
3	8
4	7
5	6
6	5

* loop also work on characters.

```
do test ;
do x = "a", "b", " ", "d" ;
output ;
end;
run;
```

	x
1	a
2	b
3	
4	d

→ output

ARRAYS

It is a collection of similar or homogeneous elements (variables). It provide a simple way to process a group of variables.

Syntax

Array array-name (number of elements) list of variables

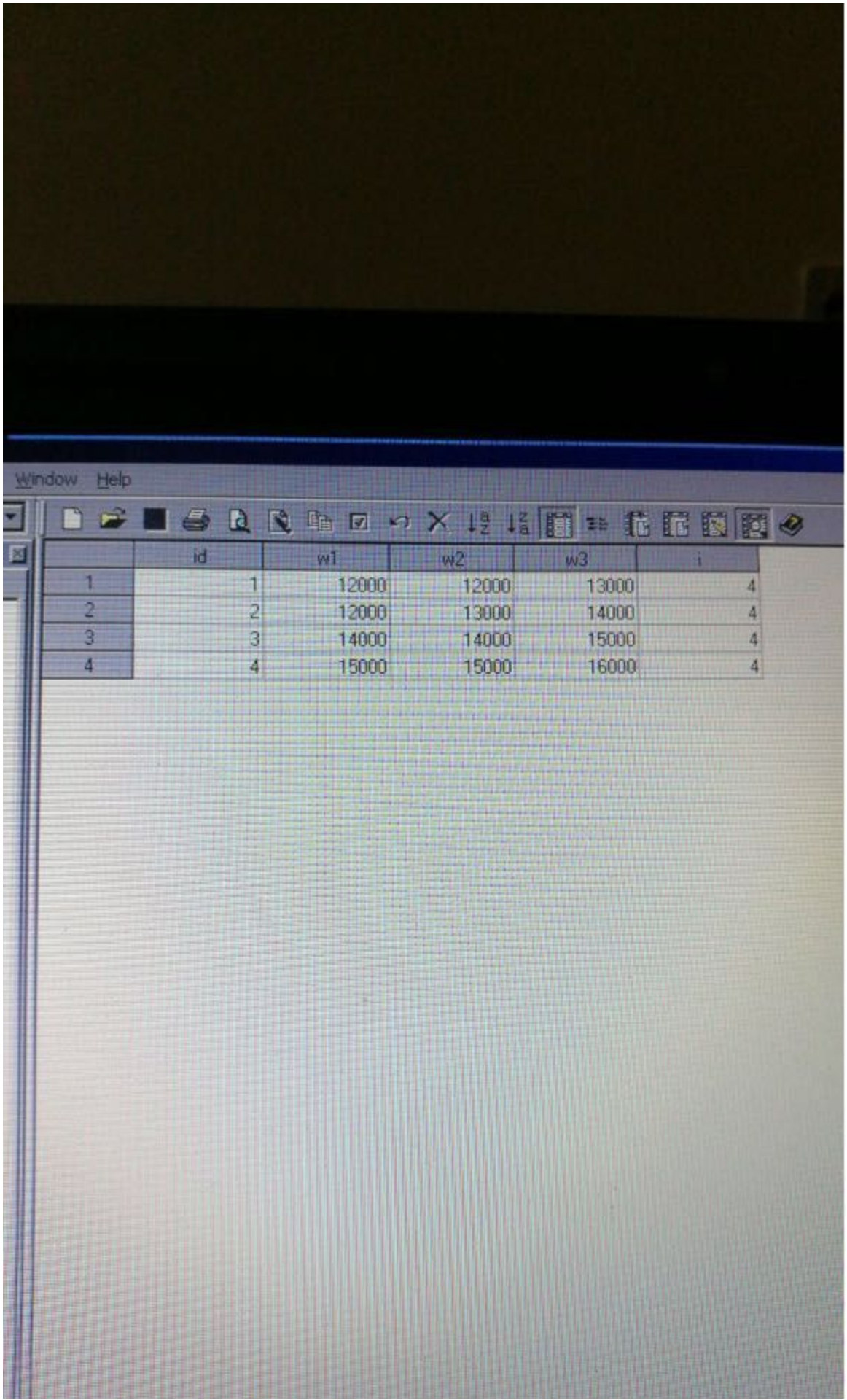
```
data a;
input id w1 w2 w3;
array k(3) w1 - w3;
array g(3) g1 - g3;
do i = 1 to 3;
g(i) = k(i) * 1000;
end;
cards;
1 12 12 13
2 12 13 14
3 14 14 15
4 15 15 16
run;
```

→ k = array name
3 = no. of elements
w1-w3 = list of variables.

w_1 = weight day 1
w_2 = weight 2
w_3 = weight 3

* Weight is in Kgs and we want in grams.

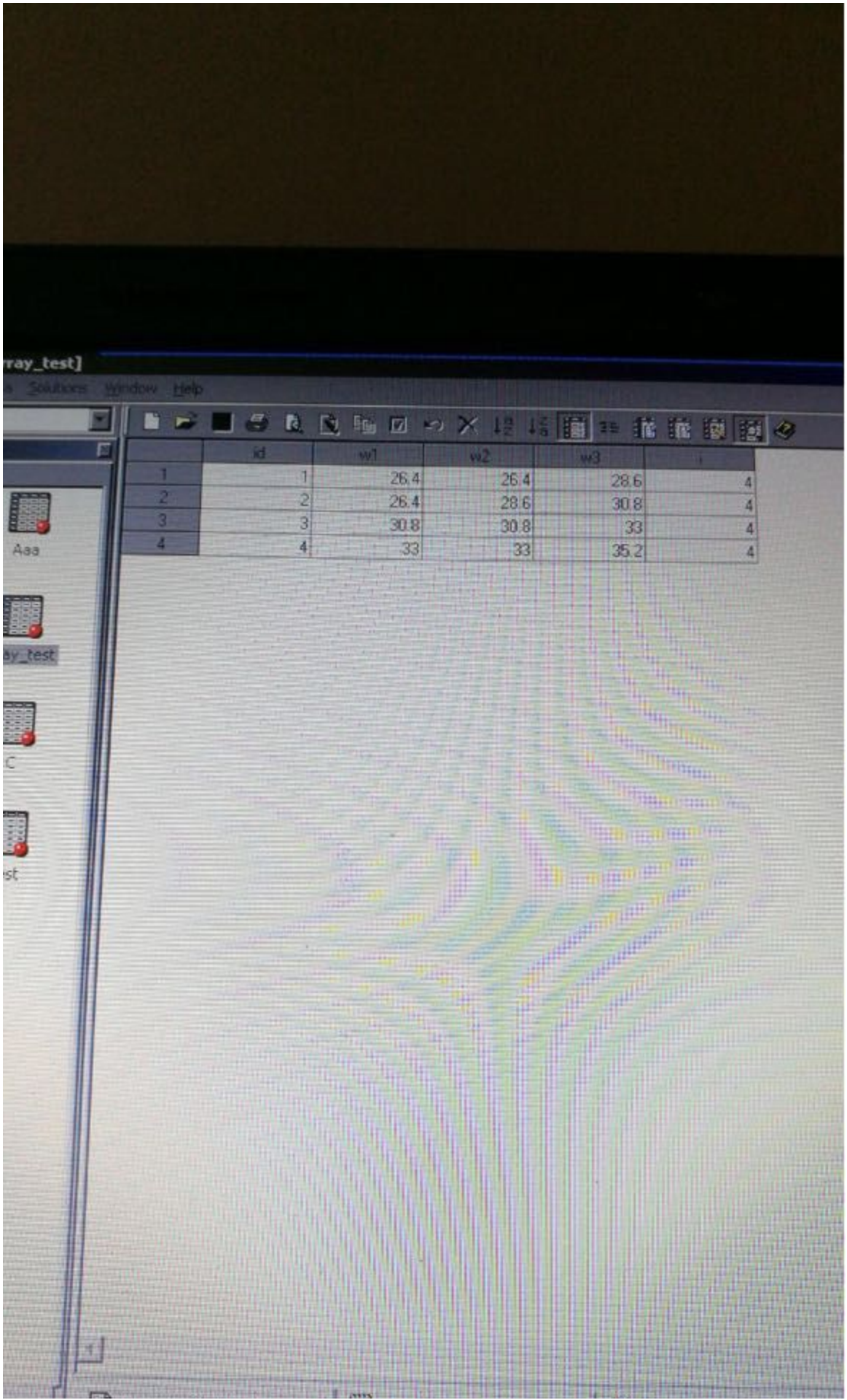
So, basically array is used when we want to process a large no. of variables.



	id	w1	w2	w3	i
1	1	12000	12000	13000	4
2	2	12000	13000	14000	4
3	3	14000	14000	15000	4
4	4	15000	15000	16000	4

Similarly, if we want weight in pounds.

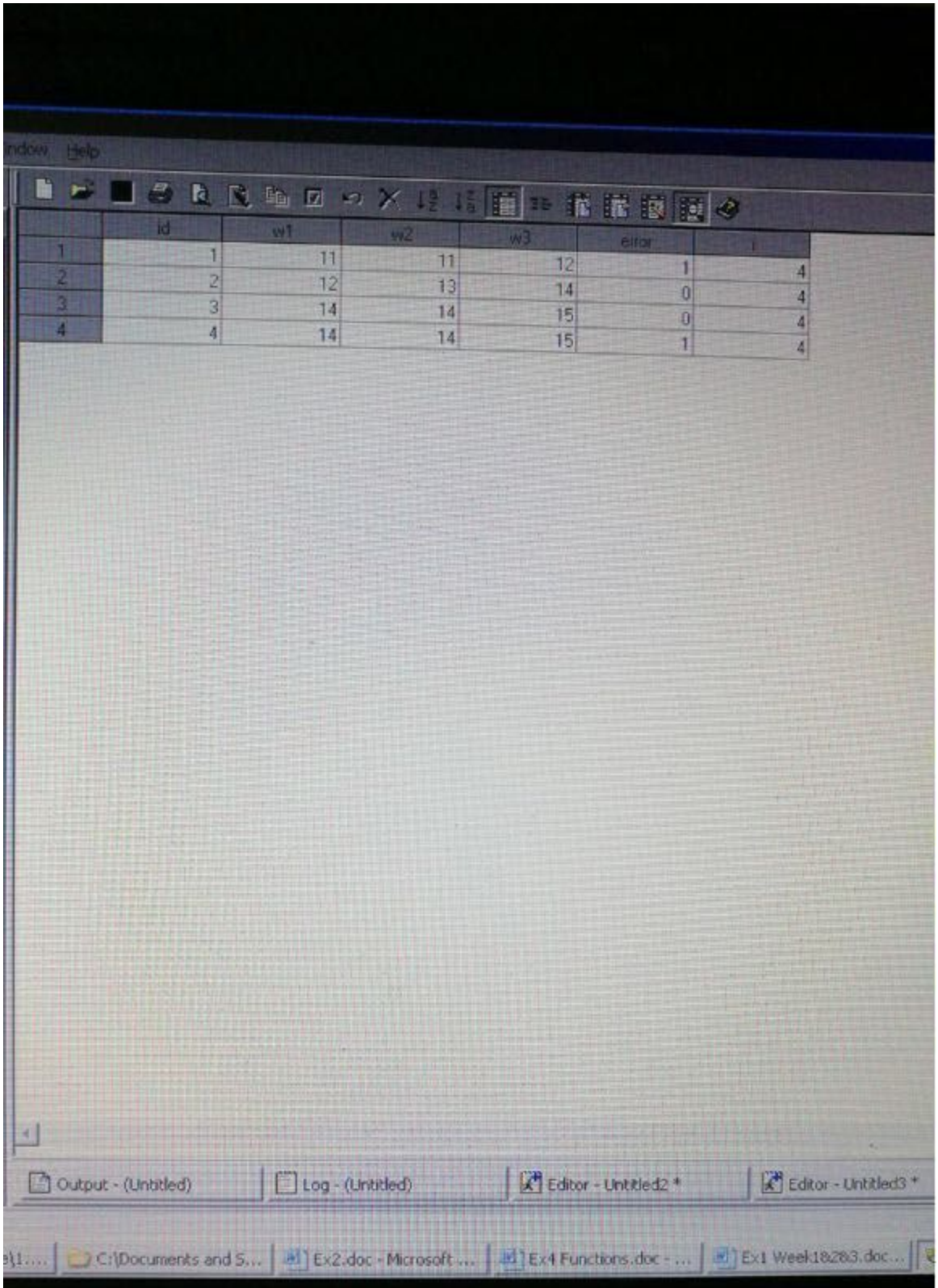
```
data a;
input id w1 w2 w3 ;
array k(3) w1-w3;
array g(3) g1-g3;
array p0(3) p1-p3;
do i = 1 to 3;                    → loop ≠ depend on no. of variables
g(i) = k(i) * 1000;
p0(i) = k(i) * 2.2;               → To convert into pounds
end;
cards;
1  12  12  13
2  12  13  14
3  14  14  15
4  15  15  16
run;
```


ray_test]
Solutions Window Help
Aaa
ay_test
C
st
id w1 w2 w3
1 1 26.4 26.4 28.6 4
2 2 26.4 28.6 30.8 4
3 3 30.8 30.8 33 4
4 4 33 33 35.2 4

```
data a;
input id w1 w2 w3 error;
array k(3) w1-w3;
do i = 1 to 3;
if error = 1 then k(i) = k(i)-1;
ends;
cards;
1 12 12 13 1
2 12 13 14 0
3 14 14 15 0
4 15 15 16 1
run;
```

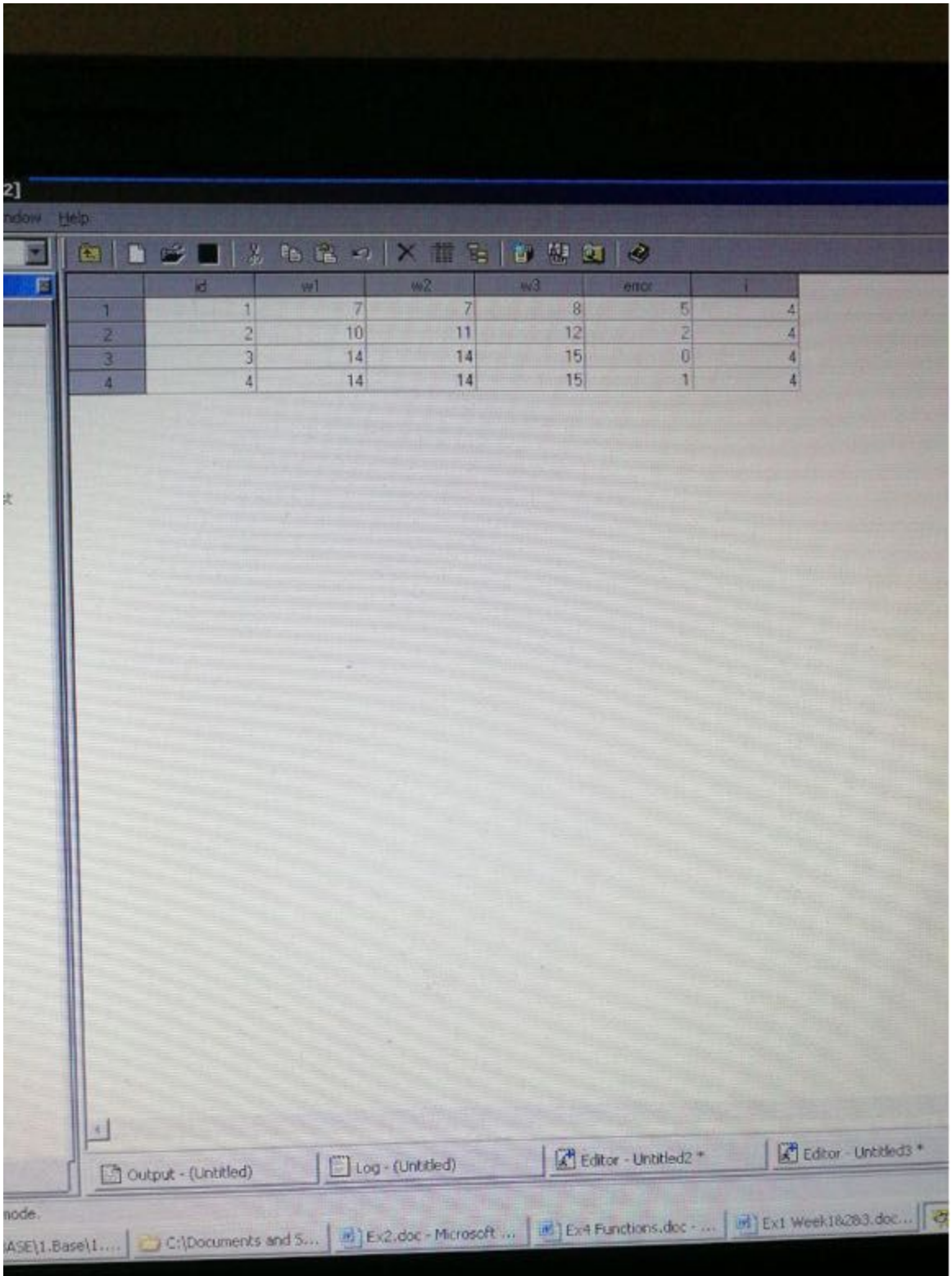
→ Suppose there was an error in weighing machine for that we have created a new variable 'error'.

Here, if there is error in weight then decrease by 1 and where it is 0, weight remains the same.


Help
id
w1
w2
w3
educ
1
1
11
11
12
1
4
2
2
12
13
14
0
4
3
3
14
14
15
0
4
4
4
14
14
15
1
4
Output - (Untitled)
Log - (Untitled)
Editor - Untitled2 *
Editor - Untitled3 *
C:\Documents and S...
Ex2.doc - Microsoft ...
Ex4 Functions.doc - ...
Ex1 Week1&2&3.doc ...

Example with different errors in weight in error variable

```
data a;
input id w1 w2 w3 error;
array k(3) w1 - w3;
do i = 1 to 3;
if error then k(i) = k(i) - error;
end;
cards;
1  12  12  13  5
2  12  13  14  2
3  14  14  15  0
4  15  15  16  1
run;
```



	id	w1	w2	w3	error	i
1	1	7	7	8	5	4
2	2	10	11	12	2	4
3	3	14	14	15	0	4
4	4	14	14	15	1	4