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Scilab No. : 3

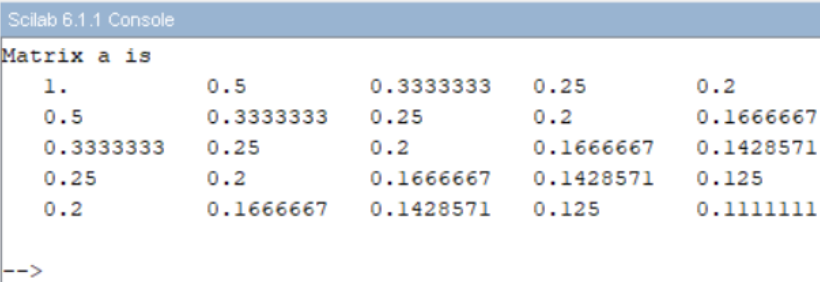
### Title: Conditional and Looping instruction

**Program 1:** Write a program to create a matrix such that elements of the matrix are the inverse of difference between the row and column number of 5 x 5

**Code:**

```
clc;  
n=5;  
a=[];  
for i=1:n  
    for j=1:n  
        a(i,j)=1/(i+j-1);  
    end  
end  
printf("Matrix a is");  
disp(a);
```

**Output:**



Scilab 6.1.1 Console

Matrix a is

1.	0.5	0.3333333	0.25	0.2
0.5	0.3333333	0.25	0.2	0.1666667
0.3333333	0.25	0.2	0.1666667	0.1428571
0.25	0.2	0.1666667	0.1428571	0.125
0.2	0.1666667	0.1428571	0.125	0.1111111

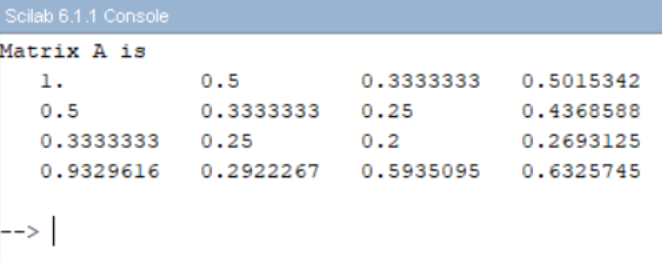
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**Program 2:** Write a program to create a matrix such that elements of the matrix are the inverse of difference between the row and column number of 3 x 3

**Code:**

```
clc;
for i=1:3
    for j=1:3
        A(i,j)=1/(i+j-1);
    end
end
printf("Matrix A is");
disp(A);
```

**Output:**



Scilab 6.1.1 Console

Matrix A is

1.	0.5	0.3333333	0.5015342
0.5	0.3333333	0.25	0.4368588
0.3333333	0.25	0.2	0.2693125
0.9329616	0.2922267	0.5935095	0.6325745

--> |

**Program 3:** Write a program check whether the random number generated using rand(1, 1) is greater than 0.5 or not.

**Code:**

```
clc;  
if(rand(1,1))>0.5 then  
    disp("True");  
else  
    disp("False");  
end
```

**Output:**



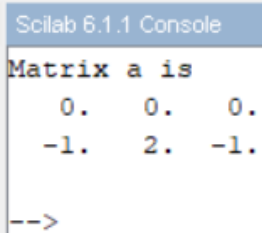
The image shows a screenshot of the Scilab 6.1.1 Console window. The window has a title bar that reads "Scilab 6.1.1 Console" and standard window control buttons (minimize, maximize, close) on the right. The main area of the console displays the output of the program, which is the string "False" in a monospaced font. Below the output, there is a prompt consisting of two dashes followed by a greater-than sign ("-->").

**Program 4:** Write a program to create a matrix A from given conditions.

**Code:**

```
clc;
i=2;
a=[]
for j=1:3,
    if(i==j)
        a(i,j)=2;
    else if abs(i-j)==1
        a(i,j)=-1;
    else a(i,j)=0;
    end;
end;
end
printf("Matrix a is");
disp(a);
```

**Output:**

The image shows a screenshot of the Scilab 6.1.1 Console. The title bar is blue and says "Scilab 6.1.1 Console". The console area has a light gray background. The text "Matrix a is" is displayed in a monospaced font. Below it, the matrix is shown as two rows of three elements each: the first row contains 0., 0., 0. and the second row contains -1., 2., -1. At the bottom of the console, there is a prompt "-->" in a light blue color.

```
Scilab 6.1.1 Console
Matrix a is
    0.    0.    0.
   -1.    2.   -1.
-->
```

**Program 5:** Write a program which runs until the count of k is less than or equal to 100 and print the final value of k.

**Code:**

```
clc;  
k=0;  
while 1==1;  
    k=k+1;  
    if k>100 then  
        break;  
    end;  
end  
disp(k);
```

**Output:**

A screenshot of the Scilab 6.1.1 Console window. The window has a blue header bar with the text "Scilab 6.1.1 Console" on the left and a question mark icon on the right. The main area is white and displays the output "101." in a monospaced font. Below the output, there is a prompt "-->" indicating the next line of code to be executed.

```
Scilab 6.1.1 Console ?  
  
101.  
  
-->
```

**Program 6:** Write a program to print the numbers from 0 to 4 using loops.

**Code:**

```
clc;  
i=0;  
while i<5  
    disp(i);  
    i=i+1;  
end
```

**Output:**

Scilab 6.1.1 Console

0.

1.

2.

3.

4.

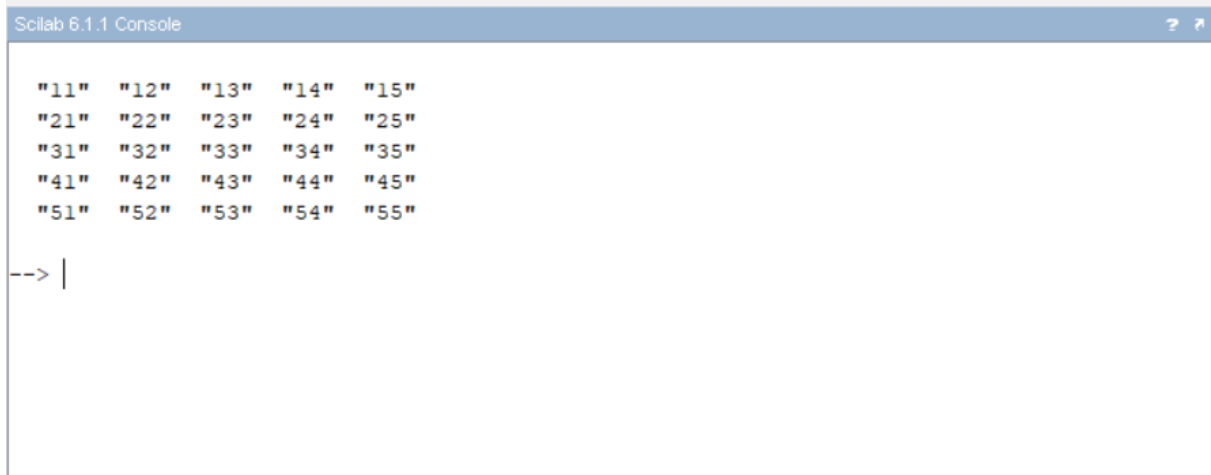
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**Program 7:** Write a program to initialize a matrix of strings

**Code:**

```
clc;
for i=1:5
    for j=1:5
        s_mat(i,j)=string(i)+string(j);
    end
end
disp(s_mat);
```

**Output:**



```
Scilab 6.1.1 Console ? ↗

"11"  "12"  "13"  "14"  "15"
"21"  "22"  "23"  "24"  "25"
"31"  "32"  "33"  "34"  "35"
"41"  "42"  "43"  "44"  "45"
"51"  "52"  "53"  "54"  "55"

--> |
```

**Program 8:** Write a program to calculate the value of  $f(x)$  for  $x \in \{0, 5\}$

$$f(x) = x^2 + \sqrt{x}$$

**Code:**

```
clc;  
x=1;  
while x<=5  
    f(x)=x^2+sqrt(x);  
    disp(f(x));  
    x=x+1;  
end
```

**Output:**



The image shows a Scilab 6.1.1 Console window with the following output:

```
2.  
  
5.4142136  
  
10.732051  
  
18.  
  
27.236068  
  
-->
```