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Batch: IT-D

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

-->
```

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:

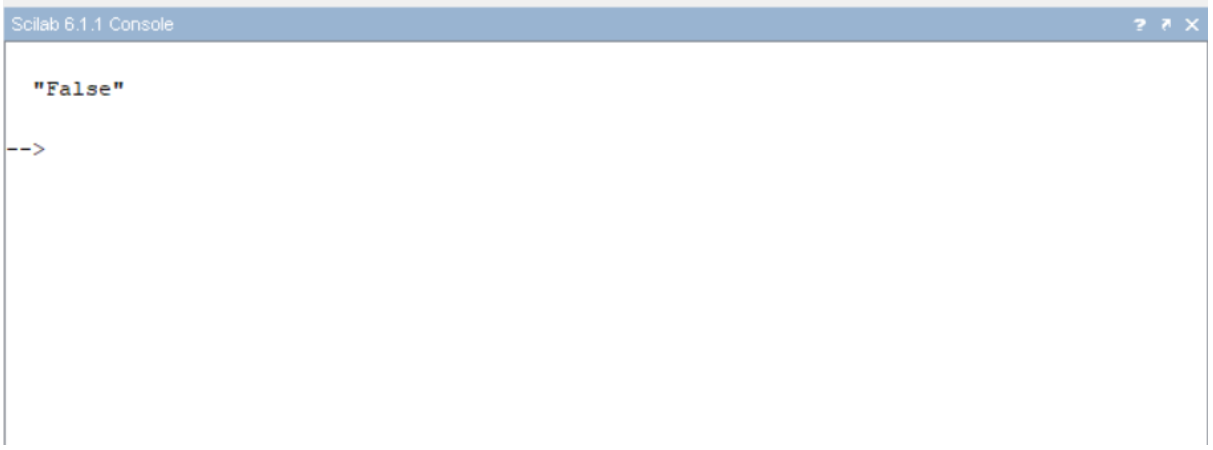
```
Scilab 6.1.1 Console
Matrix A is
   1.          0.5         0.3333333   0.5015342
   0.5         0.3333333   0.25        0.4368588
   0.3333333   0.25        0.2         0.2693125
   0.9329616   0.2922267   0.5935095   0.6325745

-->
```

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:



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:

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:

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
```

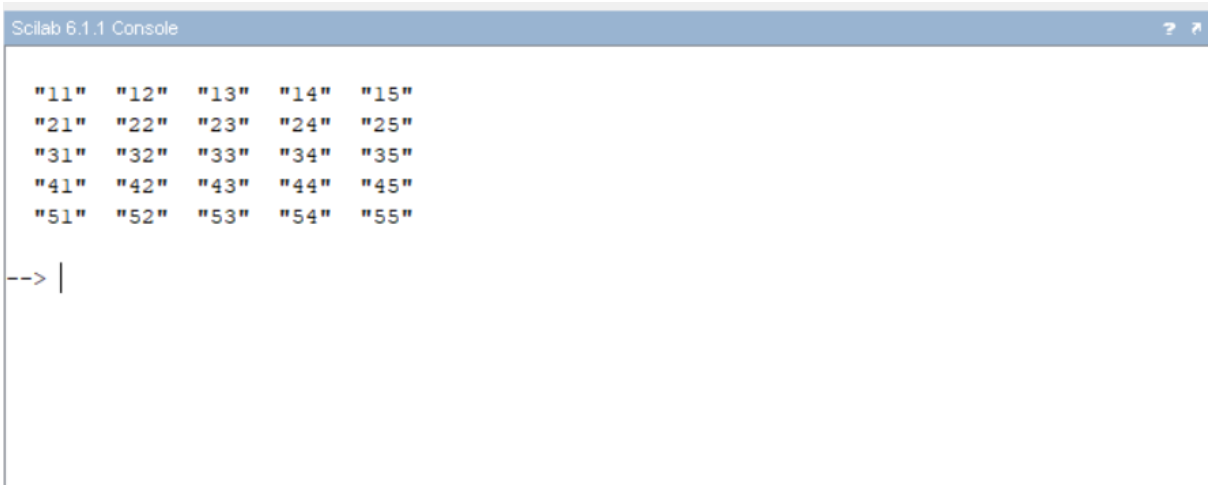
Output:

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:



Program 8: Write a program to calculate the value of f(x) for x ∈ {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: