F.Y.B.TECH. / SEM – II / ENGINEERING MATHEMATICS – II / SCILAB PRACTICAL / AY: 2020-21

NAME OF EXERCISE : Euler's Method (Numerical Solution of Ordinary Differential Equation of first order and first degree.)

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BRANCH : Computer Engineering	**DIV** : J1	**DATE** : 09-08-2021

QUESTION: Using Euler's Method find the approximate value of y when x=1.5 in five steps taking h=0.1 given $\frac{dy}{dx} = \frac{y-x}{\sqrt{xy}}$ and y(1)=2
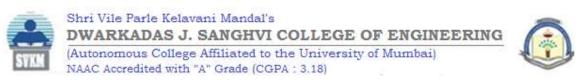
CODE:

```
deff('[z]=f(x,y)','z=(y-x)/sqrt(x*y)')
x0=input('enter the initial value of x=')
y0=input('enter the initial value of y=')
xn=input('enter the final value of x=')
h=input('enter increment value of x=')
x=[x0:h:xn]
n=length(x)
y(1)=y0
for j=1:n-1
 y(j+1)=y(j)+h*f(x(j),y(j))
 printf("iteration=%d\n at x=%f,y=%f\n",j,x(j+1),y(j+1))
end
```

INPUT:

ENTER THE INITIAL VALUE OF X=1
ENTER THE INITIAL VALUE OF Y=2
 ENTER THE FINAL VALUE OF X=1.5
ENTER INCREMENT VALUE OF X=0.1

OUTPUT:

iteration=1
 at x=1.100000,y=2.070711
iteration=2
 at x=1.200000,y=2.135029
iteration=3
 at x=1.300000,y=2.193445
iteration=4
 at x=1.400000,y=2.246354
iteration=5
 at x=1.500000,y=2.294080

Scilab 6.1.0 Console

File Edit Control Applications ?

Scilab 6.1.0 Console

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Startup execution:
  loading initial environment

--> exec('C:\Users\AYUSH JAIN\OneDrive\Desktop\scilab4.sce', -1)
enter the initial value of x=1

enter the initial value of y=2

enter the final value of x=1.5

enter increment value of x=0.1

iteration=1
 at x=1.100000,y=2.070711
iteration=2
 at x=1.200000,y=2.135029
iteration=3
 at x=1.300000,y=2.193445
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-->
```