Artificial Intelligence

BTech ICT/CSE Sem VI, Winter Semester 2018-19

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ASSIGNMENT 2

**Q1.**

function yprim=f(t, y) //function to calculate particular derivative

yprim(1)=y(2);

yprim(2)=-2\*y(1);

endfunction

t0=0; tmax=5; //ranges for time and time interval

t=t0:0.05:tmax;

y0=1; yprim0=1; //values of y(0) and y’(0) according to case A

y=ode([y0;yprim0],t0,t,f); //creating range of values for y-axis

clf;

plot(t,y(1,:)) //plot the function

y0=4; yprim0=1; //values of y(0) and y’(0) according to case B

y=ode([y0;yprim0],t0,t,f); //creating range of value for y-axis

plot(t,y(1,:),"r") //plot the function with a different colour

**Q2.**

|  |  |  |
| --- | --- | --- |
| function A1=map(A) //creating function     [r,c]=size(A) //assigning size of matrix A to other variables     uA=unique(A) //removing duplicate values from matrix      for i=1: r //looping row variable         for j= 1:c //traversing columns in a row              A1(i,j)=find(uA==A(i,j)) //assigning the index of element matching current element  //from unique matrix, thus giving us the required mapping         end     end endfunction  x=[1 6 9;2 3 4;4 6 2] //giving values for testing disp(map(x)); //displaying answer  **i.**  imgg = imread('index.jpeg'); //read image from a file in a matrix clf; figure;  imshow(imgg); //displays image    **ii.**  disp(imgg); //display image matrix  inp=input("enter the number to be searched in img pixels") //input the no from 1 to 255 disp(inp)   indx=find(imgg==inp); //find index of given number in image matrix disp("the index is") disp(indx) //display index  maxx=max(imgg) //find maximum value in image matrix minn=min(imgg) //find minimum value in image matrix  //display values  disp(maxx) disp(minn)  **iii.**  disp( map(imgg) ) //displays the mapped matrix of the original matrix  //according to function Map\_Matrix created above.  imshow(imgg) //shows new image |  |  |

**Q3.**

l=[]

i=1

arr=[]

num=grand(1,1,"uin",1,50) //creates random value

while i<=10 //runs for 10 times i.e. 0 guesses

x=input("guess the number between 1 to 50")

l(i)=x

arr(i)=num

if x==num then //vindicate

disp("you guessed it correctly")

break

elseif x>num //if guess is higher

disp("too high")

elseif x<num //if guess is lower

disp("too low")

end

i=i+1

end

if x==10 then

disp("you failed to guess it correctly")

end

clf;

plot(1:i,arr) //plot the random number

plot(1:i,l) //plot guesses

**Q4.**

function y=f(x) //function to inculcate sigmoid func formula

y=1/(1+exp(-x));

endfunction

square(-1,-1,1,1) //creates isometric scales

x0=1; xmax=100;

x=x0:1:xmax; //sets range of x from 1 to 100

clf;

plot(x,f) // plots the function