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PAPER = Computer Programming

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QNO 4 [ part A]

ANS Element of matlab as a programming language

. Expressions

. flow control blucks

. Conditional

. Iterations [ loops]

. Scripts

. Functions

. Objects and classes [not covered here ]

. Be mindful of existing variab les and fulction names i

creating a variable or function that is a all ready used by matlab will cause troubles and errors I

Example .. saving a variable as sin= 10 will prevent you from using the sine functional use some thing more descriptive such as – X=10

M file

1 Text files containing matlab progrms

. Can be called from the command lines or from other M files

2 Contain M file extension

3 Two man tipes of Mfile .

. Scripts

. Functions

4 Comment character is present

. present will comment character out rest of line

M file scripts

1 Scripts are simply Mfiles with it set of commands to run

. Don,t not require in put values are have out put values

. Execute commands similarly to have they would be done ftyped into commands similary to how commond windo

2 To creat new M file

. A diter file name

. Ctrl nr0 m

. Selete new 0 scripts from menu

3 To run M file

. A file name .

M file Fuontion

Typically require in put or out put values

2 What happens in the fuontion stays in the fuontion

. Only variables visible after fuontion executes are thuse variables defined as out put

3 Usually on file for each fuontion the file

4 Structure

. Fuontion [out put = fulcname ] [in put commonds end ]

Q NO 1 [part A]

ANS Lines spec [line specification ] syntax of line specitication string

.Lon log to log scale plot

.Plot 2. D line plot

. Plot 3 . 3. D line plot

Plot yy . 2. D plots with y. axis on both g left and aright side

Polar .polar coordinate plot

Semilogx . semilogarithmic plot

Sub plot . creates axis in tiled position

Xlim. sets or queries X.axic limits

Ylim . sets or queries y. axis limits

Zlim. sets or queries z . axis limits

Folwing table describs basic plot and graphs

Box .A xis border

Errorbar . plots error bars along curve

Hold . Retians current graph while adding new graphs

Line. creates line object

Line spec[ Line Specification] .syntax of line stecification string

Lolglog Log to log sale plot

Plot .2 .D line plot

Q NO 3 [Part A ]

ANS When a MEX fuonction returns control to MATLAB it returls result of its computations in the out put argumtens – the mxarrays contained in the left . side arguments p I h s [ ] . These arrays must have a temporary scope so don not pass arrays creaiated with the mex Make Array persistent function in p 1 h s. MATLAB desproys any mx array creaiated by the MEX fuonction that is not in p 1 h s. MATLAB also free any memory that was allocated in the MEXfuonction using the MX Calloc . mxmalloc or mxrealloc fountions .

Any misconctructed arrays left our it end of a biamary MEX file executions have the potencial to cause memory errors .

Math work – recommends that MEX fuontion desproy there on temporary arrays and free there one dynamically allocated memory . it is more efficient to perform this cleamup in the source MEX file then to rely on the automatic mechanism .For more information on memory management

ANS MATLab Q NO 2 Part

Specialized plotting fuonctions

Polar ; to make plor plots

Polar [ 0.01.2th pi.cos[0; 01 ;2 pi ] 2]

bar ; to make bar graphs

bar [1;1o, rand [1, 10] ;

stairs ; plot piecewise constant functions

stairs [1; 10, rand [ 1, 10] ;

. fill ; draw and fills a polygon with specified vertices

fill [ 01 0.5] . [0 0 1 ] , r ]

QNO 1 [part B]

X choose a range for x and use 500 poits

x – linspace [- 20, 20, 500] ..

x creat y

Y – x .. cos[ x ,sin] [x]

x plot the fountion

plot [ x. y ; b ,,, liewidth,, to]

grid on

x labe 1 [ x,,, fontsize ,15] ,,

y 1 abe 1 [y,, fontsize ,, 15 ] ,,

title[ y=x ,, cos x] sin[ x],, fontsize ,,[15,,]

axis equal 1

present make a block 11 e at the x and y axes

line [x 1 1 m .[0.0] color ,, k linewidth [ 2] ,,

line [0.0] y lim color ,, k,, linewidth [2 ] ,,

QNO3 part A   
ANS Matlab copy memory when passing arrays to founction some user thik that because METLAB be have as data are passed by value that MATLAB al ways makes cops of the input when cally the founction this is not nesiscery dake alook and the fuontion type pred 1

founction =foo [x ,a, b]

a [1]= a[1] 12

In pred 1 the fisrt and third and put x and b are not altered in side matlab recoginizes this and passes both this veriable and with out making and many example . Fx is a large data set . However and fred 1 and we can see date the second and put a gets modified in side matlab

recognizes when this is happening to everyiable and makes a copy and to of it work work with so that the original veriabl in the calling work space is now modified .

QNO 3 [B]

ANS Write the formula to determine the distance between two points d= [x1 y1 ,] and [ x2 y2 ]

Write the MATLAB programe to determine the distance between to points specified by the user p 1 = input [ enter the first point 1 ike ] [ 2 4 ] / n ;];

x1 =p 1[1]

y 1=p1 [2]

reads the first point

p 2 = in put [enter the second point like [2 4 ] n];

x2=p2 [1] ;

y2=p2 [2] read the second poins

d= sqrt [ x1-x2 ] ,2];

calculates distance between the points fprintf [ the distance between to point is 5 . 2 f/ in ,]

[d ]

prints the distance between the to points

QNO [5]

ANS Generate a plot fot the fuontion of y [x] = x; 2 – 3 X PLUS 2

SOL

y [x] = x ;2 -3x plus 2

x = 0; 1 ; 3

y= x , ;2 – 3 ;;; x plus 2 ‘

plot [ x, y]

title plot of x, ;2 – 3 , ;;; x plus 2] ,,

x label [ ,x , ];

y label [‘ y’ ];

grid on ,

QNO 4 [part B]

ANS MATLAB

Beripe [1] tam convertnion

purpo…

To convert an in put temperature trom degrees an output temperature in ka 1v in .

Record of revisions

date programe r description of

……. …………. ………………..

01/03/07 s-j- chapman original code

define varinbles ;;

temp -f -- temperature in derees Fahrenheit

tem –k - temperature in kelvin

.prompt the user for the input temperature .

.tem –f = in put [ enter the temperature in degree Fahrenheint ;

convert to kelvin .

tem –k =[5/9] .[tem- 1 -32 ]plus 273.15’

write out the result . frinthigt [86. 2 f degree b fahranhite = 86 .2f

kelvin in …. tem –f tem –k] ,,, ss