

Md. Fazlul Karim  
ID – 2014182643  
Sec - 01

### Ans no – 1

**Single:** single(X) converts the vector X to single precision. X can be any numeric object (such as a DOUBLE).

**Double:** double(X) returns the double precision value for X. If X is already a double precision array, double has no effect.

**Format:** format Set output format. format with no inputs sets the output format to the default appropriate for the class of the variable. For float variables, the default is format SHORT.

**Format long:** Scaled fixed point format with 15 digits for double and 7 digits for single.

**str2num:** str2num Convert character array or string scalar to numeric array. X = str2num(S) converts a character array or string scalar representation of a matrix of numbers to a numeric matrix.

**Num2str:** num2str Convert numbers to character representation.

**Int2str:** int2str Represent integers as character array. S = int2str(X) rounds the elements of numeric matrix X to integers and converts the result into a character array that represents the numbers.

**mat2str** Represent matrix as character vector in MATLAB syntax. STR = mat2str (MAT) represents the matrix MAT as a character vector so that EVAL(STR) produces the original matrix (to within 15 digits of precision). Conversions of non-scalar matrices contain brackets [].

**Reshape:** reshape Reshape array. reshape (X, M, N) or reshape (X, [M, N]) returns the M-by-N matrix whose elements are taken column wise from X. An error results if X does not have M\*N elements.

**sort:** Sort in ascending or descending order. B = sort(A) sorts in ascending order.

### Ans No – 2

- i. round(X) rounds each element of X to the nearest integer. The floor function rounds values to the nearest integer toward negative infinity.

1

- ii. The mod function produces a result that is either zero or has the same sign as the divisor. The rem function produces a result that is either zero or has the same sign as the dividend. Another difference is the convention when the divisor is zero.
- iii. Mean: It will return the mean of the elements of A along the first array.  
Median: It will return the median value.

### Ans No – 3

The screenshot shows the MATLAB environment with a script named Q3.m. The script contains the following code:

```

1 % Name: Md. Fazlul Karim
2 % ID- 2014182643
3 % Sec - 01
4
5
6 clc; clear all;
7
8 sqrt(144) + (log10(100))^2 + exp(3) - asin(.5) + csc(pi/6) * abs(-5)

```

The Command Window shows the result of the expression:

```

ans =
    32.5619
fx >>

```

The Workspace window shows the variable 'ans' with the value 32.5619.

### Ans No – 4

The screenshot shows the MATLAB environment with a script named Q3.m. The script contains the following code:

```

12
13
14 % input function
15 function m = inp_mat()
16     m = inputdlg('Input Matrix: ', 'input');
17     m = str2num(m{:});
18 end
19
20 % Square matrix function:
21 function s = sqr_mat(x)
22     s = x^2;
23 end
24
25 %Transpose matrix function:
26
27 function t = tran_mat(x)
28     [row, col] = size(x);
29     for i = 1:row
30         for j = 1:col
31             f(j,i) = x(i,j);
32         end
33     end
34     t = f(:, :);
35 end

```

The Command Window shows the results of the functions:

```

M =
     1     2
     3     4

transpose_matrix =
     1     3
     2     4

square_matrix =
     7    10
    15    22
fx >>

```

The Workspace window shows the variables 'M' (1x2 double), 'square\_matrix' (2x2 double), and 'transpose\_ma...' (1x2 double).

(a)

1

The image shows a MATLAB Editor window with a script file named 'Q3.m'. The script contains the following code:

```

1 % Name: Md. Fazlul Karim
2 % ID- 2014182643
3 % Sec - 01
4
5 clc; clear all;
6
7 M = inp_mat()
8
9 transpose_matrix = tran_mat(M)
10 square_matrix = sqr_mat(M)
11
12
13
14 % input function
15 function m = inp_mat()
16     m = inputdlg('Input Matrix: ', 'input');
17     m = str2num(m{:});
18 end
19
20 % Square matrix function:
21 function s = sqr_mat(x)
22     s = x^2;
23 end
24

```

The Command Window shows the output of the script:

```

M =
     1     2
     3     4

transpose_matrix =
     1     3
     2     4

square_matrix =
     7    10
    15    22
fx >>

```

The Workspace window shows the following variables:

Name	Value
M	[1234]
square_matrix	[7 10; 15 22]
transpose_ma...	[1 3; 2 4]

(b)

Ans No – 5

The image shows a MATLAB Editor window with a script file named 'Q5.m'. The script contains the following code:

```

1 % Name: Md. Fazlul Karim
2 % ID- 2014182643
3 % Sec - 01
4
5 clc; clear all;
6
7 x = [
8     1 1 1 1;
9     1 1 1 -1;
10    1 1 -1 1;
11    1 2 -2 1
12 ];
13
14 y = [
15     1;
16    -1;
17    -3;
18    -2
19 ];
20
21 inv_x = inv(x);
22 result = inv_x * y
23
24

```

The Command Window shows the output of the script:

```

result =
    -5
     3
     2
     1
fx >>

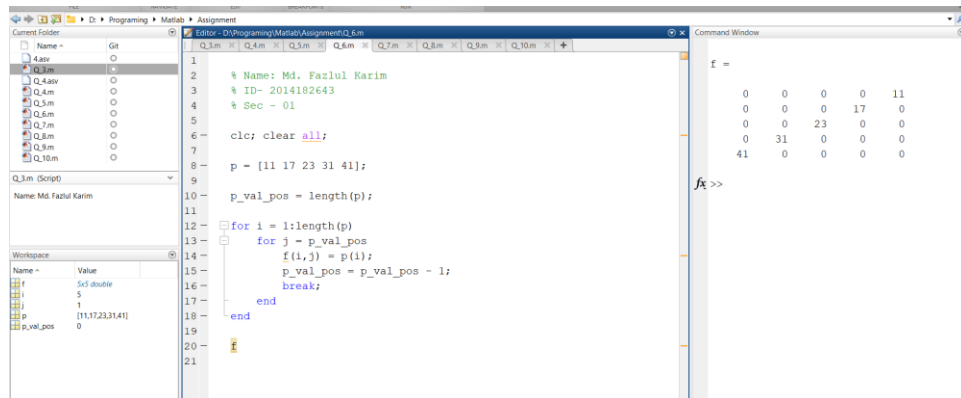
```

The Workspace window shows the following variables:

Name	Value
inv_x	4x4 double
result	[-5; 3; 2; 1]
x	4x4 double
y	[1; -1; -3; -2]

Ans No – 6

1



The screenshot shows the MATLAB Editor with a script named Q.3.m. The script contains the following code:

```

1
2 % Name: Md. Fazlul Karim
3 % ID- 2014182643
4 % Sec - 01
5
6 clc; clear all;
7
8 p = [11 17 23 31 41];
9
10 p_val_pos = length(p);
11
12 for i = 1:length(p)
13     for j = p_val_pos
14         f(i,j) = p(i);
15         p_val_pos = p_val_pos - 1;
16         break;
17     end
18 end
19
20
21

```

The Command Window displays the output of the script:

```

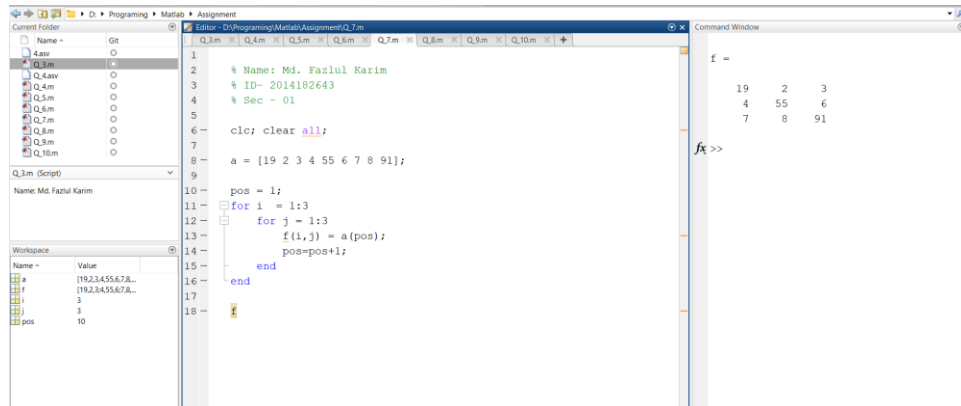
f =
     0     0     0     0    11
     0     0     0    17     0
     0     0    23     0     0
     0    31     0     0     0
    41     0     0     0     0

```

The Workspace shows the following variables:

Name	Value
f	5x5 double
i	1
j	1
p	[11 17 23 31 41]
p_val_pos	0

Ans No – 7



The screenshot shows the MATLAB Editor with a script named Q.7.m. The script contains the following code:

```

1
2 % Name: Md. Fazlul Karim
3 % ID- 2014182643
4 % Sec - 01
5
6 clc; clear all;
7
8 a = [19 2 3 4 55 6 7 8 91];
9
10 pos = 1;
11 for i = 1:3
12     for j = 1:3
13         f(i,j) = a(pos);
14         pos=pos+1;
15     end
16 end
17
18

```

The Command Window displays the output of the script:

```

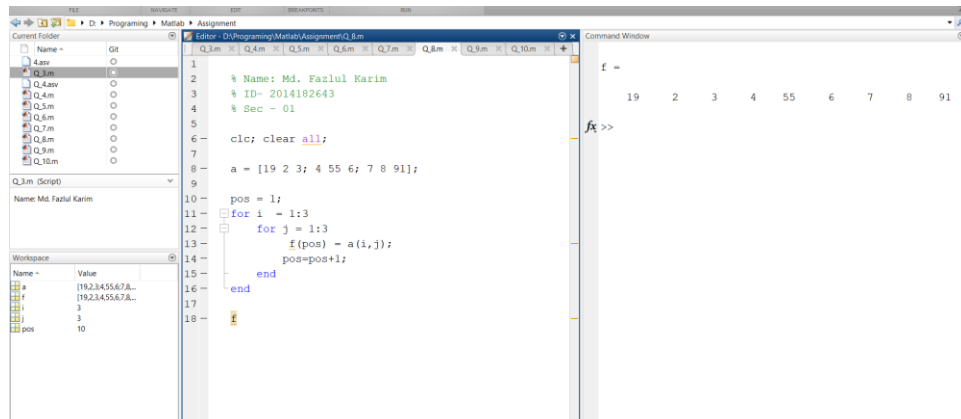
f =
    19     2     3
     4    55     6
     7     8    91

```

The Workspace shows the following variables:

Name	Value
a	[19 2 3 4 55 6 7 8 91]
i	1
j	1
pos	10

Ans No – 8



The screenshot shows the MATLAB Editor with a script named Q.8.m. The script contains the following code:

```

1
2 % Name: Md. Fazlul Karim
3 % ID- 2014182643
4 % Sec - 01
5
6 clc; clear all;
7
8 a = [19 2 3; 4 55 6; 7 8 91];
9
10 pos = 1;
11 for i = 1:3
12     for j = 1:3
13         f(pos) = a(i,j);
14         pos=pos+1;
15     end
16 end
17
18

```

The Command Window displays the output of the script:

```

f =
    19     2     3     4    55     6     7     8    91

```

The Workspace shows the following variables:

Name	Value
a	[19 2 3 4 55 6 7 8 91]
i	1
j	1
pos	10

1

## Ans No – 9

```

1 % Name: Md. Fazlul Karim
2 % ID- 2014182643
3 % Sec - 01
4
5 clc; clear all;
6
7 m = [11 14 21 44 57];
8
9
10 for i = length(m)-1:1
11     f(length(m) - i + 1) = m(i);
12 end
13
14
15 pos = 1;
16 for i = 1:length(f)
17     for j = pos
18         x(i,j) = f(pos);
19         pos=pos+1;
20         break
21     end
22 end
23 x(4,3) = 8;
24

```

Workspace:

Name	Value
f	[57,44,21,14,11]
i	5
j	5
m	[11,14,21,44,57]
pos	6
x	5x5 double

Command Window:

```

fx >>
x =
    57     0     0     0     0
     0    44     0     0     0
     0     0    21     0     0
     0     0     8    14     0
     0     0     0     0    11

```

## Ans No – 10

```

1 % Name: Md. Fazlul Karim
2 % ID- 2014182643
3 % Sec - 01
4
5 clc; clear all;
6
7 r = input('Enter radius: ');
8
9
10 x = input('Enter a/v/s to get area/volume/sphere: ', 's');
11
12 if x == 'a'
13     val = pi*(r^2);
14     disp(['Area: ', num2str(val)]);
15 elseif x == 'v'
16     val = (4/3)*pi*(r^3);
17     disp(['Volume: ', num2str(val)]);
18 elseif x == 's'
19     val = pi*(r^2);
20     disp(['Sphere: ', num2str(val)]);
21 end

```

Workspace:

Name	Value
r	3
val	113.0973
x	v

Command Window:

```

fx >>
Enter radius: 3
Enter a/v/s to get area/volume/sphere: v
Volume: 113.0973

```