ENCP 100 WS2020

Assignment 00

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01/09/20 and 2:00 P.M.

ANSWERS FOR QUESTION 1:

a)

```
Welcome to ENCP 100!
```

b)

```
d =
    2.9000
```

c)

```
Fr =
   18.7500
```

ANSWERS FOR QUESTION 2:

a) no output

b)

```
str =
    'The result is:'
number =
    1.2340
```

c)

```
The result is:
    1.2340
```

d)

```
The result is: 1.234
```

e)

```
****************
Robo Cleaner 2.0
Press A to start
****************
```

f)

8.5m

g)

```
Using:
1) A wheel of radius: r = 0.5 [m]
2) The angular displacement: theta = 1.0472 [radians]

The distance travelled is: 0.5236
```

MATLAB CODE FOR QUESTION 2:

e)

```
clear all;
clc;

line = '****************';
name = 'Robo Cleaner 2.0';
ins = 'Press A to start';

disp(line);
disp(name);
disp(ins);
disp(line);
```

f)

```
clear all;
clc;

resStr = [ num2str(countsToMetres(2500)) 'm' ];
disp(resStr);

function metres = countsToMetres(counts)
    metres = counts * 0.0034;
end
```

g)

```
clear all;
clc;
format short;

r = 0.5;
theta = 1.0472;
s = (r * theta);
rStr = num2str(round(r, 2));
thetaStr = num2str(round(theta, 5));

resStr = sprintf('Using:\n1) A wheel of radius: r = %s [m]\n2)
The angular displacement: theta = %s [radians]\n\nThe distance
travelled is: %s', rStr, thetaStr, num2str(s));

disp(resStr);
```

ANSWERS FOR QUESTION 3:

a)

```
Please enter the base: 4.5
Please enter the length: 1

The perimeter of the rectangle is:
11
```

b)

```
Please enter the speed         : 10.0
Please enter the acceleration  : 0.2
Please enter the change in time: 1.0

The change in distance is:
   10.1000
```

c)

```
Please enter the coefficient of Friction : 0.2
Please enter the Normal Force            : 10

The friction force is:
2
```

MATLAB CODE FOR QUESTION 3

a)

```
clear all;
clc;

base  = input('Please enter the base: ');
length = input('Please enter the length: ');

p = (2 * base) + (2 * length);
resStr = sprintf('\nThe perimeter of the rectangle is:\n%s',
num2str(p));
disp(resStr)
```

b)

```
clear all;
clc;

v = input('Please enter the speed         : ');
a = input('Please enter the acceleration  : ');
t = input('Please enter the change in time: ');

s = (v * t) + (0.5 * a * (t^2));


fprintf('\nThe change in distance is:\n');
disp(s);
```

c)

```
clear all;
clc;

coeff = input('Please enter the coefficient of Friction : ');
normal = input('Please enter the Normal Force            : ');

fric = normal * coeff;

fprintf('\nThe friction force is: \n');
disp(num2str(fric));
```