ENG EK 125 - Worksheet 5A

Name: Ande Chen Section: C1

1) In the Command Window, write a **for** loop that will iterate through the integers from 32 to 255. For each, show the corresponding character from the character encoding.

```
>> for i = 32:255
disp(char(i))
end

!
"
#
$
%
&
'
(
)
*
+
,
-
.
/
0
1
2
3
```

2) Write a script *beautyofmath* that produces the following output. The script should iterate from 1 to 9 to produce the expressions on the left, perform the specified operation to get the results shown on the right, and print exactly in the format shown here.

```
>> beautyofmath
1 x 8 + 1 = 9
12 x 8 + 2 = 98
123 x 8 + 3 = 987
1234 x 8 + 4 = 9876
12345 x 8 + 5 = 98765
123456 x 8 + 6 = 987654
1234567 x 8 + 7 = 9876543
12345678 x 8 + 8 = 98765432
123456789 x 8 + 9 = 987654321
```

```
head = 0;
tail = 0;
for i = 0:8
    head = (head * 10) + (i+1);
    tail = (tail * 10) + (9-i);

    fprintf('%d x 8 + %d = %d\n', head, i+1, tail);
end
```

```
>> head = 0;
tail = 0;
for i = 0:8
    head = (head * 10) + (i+1);
    tail = (tail * 10) + (9-i);

    fprintf('%d x 8 + %d = %d\n', head, i+1, tail);
end
1 x 8 + 1 = 9
12 x 8 + 2 = 98
123 x 8 + 3 = 987
1234 x 8 + 4 = 9876
12345 x 8 + 5 = 98765
123456 x 8 + 6 = 987654
1234567 x 8 + 7 = 9876543
12345678 x 8 + 8 = 98765432
123456789 x 8 + 9 = 987654321
```

3) Write a function *prodby2* that will receive a value of a positive integer *n* as an input and will return the product of the odd integers from 1 to n, or from 1 to n-1 if n is even.

```
function total = prodby2(n)
if mod(n,2) ~= 0
    for i = 0:(floor(n/2))
        odds(i+1) = 2*i + 1;
        total = prod(odds);
    end
else
    for i = 0:(floor((n-1)/2))
        evens(i+1) = 2*i + 1;
        total = prod(evens);
    end
end
end
```

```
% This script uses the function prodby2 to find the product of the odd
% integers from 1 to n.

n = randi([1, 20]);

total = prodby2(n);
fprintf('n is %d.\n', n);
fprintf('The product is %d.\n', total);
```

```
>> % This script uses the function prodby2 to find the product of the odd
% integers from 1 to n.

n = randi([1, 20]);

total = prodby2(n);
fprintf('n is %d.\n', n);
fprintf('The product is %d.\n', total);
n is 10.
The product is 945.
```

4) Write a script that will print the following multiplication table:

```
1
2   4
3   6   9
4   8   12   16
5   10   15   20   25
```

```
1 -  for a = 1:5
2 -      for b = 1:a
3 -          fprintf('%d   ', a * b);
4 -      end
5 -      fprintf('\n');
6 -  end
```

```
>> for a = 1:5
    for b = 1:a
        fprintf('%d   ', a * b);
    end
    fprintf('\n');
end
1
2   4
3   6   9
4   8   12   16
5   10   15   20   25
```