Computer Science I
Exercise: Recursion

We have gone through many examples in the class and those examples are available in the slides and uploaded codes. Try to test those codes and modify as you wish for getting more clarification.

In addition try the following:

1) What would be the output of the following recursive function if we call rec2(5) ?

```
void rec2(int x)
{
    if (x==0)
        return;
     rec2(x-1);
    printf("%d  ", x);
}
```

Answer: 1 2 3 4 5

2) Write a recursive function that calculates the sum $1^1 + 2^2 + 3^3 + \ldots + n^n$, given an integer value of n in between 1 and 9. You can write a separate power function in this process and call that power function as needed:

```
int crazySum(int n); {
    if(n==1)
      return n;

    return pow(n, n)+crazySum(n-1);
}
```

```
int pow(int n, int p){
  if (p ==0){
     return 1;
  }
  return n* pow(n, p-1);
}
```

3) Given the function below, what would the function call question3(10, 101) return?

```
int question3(int a, int b) {
        if (a == 0) return b;
        if (b == 0) return a;
        return question3(10*a+b%10, b/10);
}
```

101, 10 10101, 0
1010, 1 10101

Answer: 10101

4) Write a recursive function that converts a decimal number to an octal number.

```
int decToOct(int n, int i){
    int s= (n%8)* i;
    if (n<8)
       return s;
    return decToOct(n/8, i*10)+s;

}
```