

# Project2Description

1. The description of what each mystery function does.

- MysteryFunction1:
  - setup register rax to 1.
  - it enters a loop where it multiplies rax by rdi and decrements rsi
  - the loop continues as long as the previous iteration, rsi is greater than zero.  
This function is calculating the factorial of the number inside rdi
- MysteryFunction2:
  - start with edx and ecx at 0
  - start loop, increment ecx each time
  - check if the bit in edi is set for each bit position (0 - 31)
  - set bit in edx to 1 with bitwise OR (right shifted)
  - iterate until all 32 bits are checked
- MysteryFunction3:
  - initialize rcx with first array element
  - iterate starting from the second element
  - compare each element with curr max
  - if element is greater than curr max, update rcx equal to that element
  - return max value in the array
- MysteryFunction4:
  - initialize eax to 0
  - enter a loop
    - grab the least sig bit of rdi and add it to eax
    - shift rdi right by 1
    - iterate until rdi equals 0
  - return eax
- MysteryFunction5:
  - perform an XOR operation between esi and edi and store it in edi
  - set eax equal to 0
  - enter a loop
    - grab the least sig bit of edi and add it to eax
    - right shift edi by 1 bit
    - iterate until edi is zero
  - return eax

I used the power points and lectures to see patterns in the assembly code. There are times when the same kind of operation in assembly occurs and it always maps closely to the C.