Homework 4
ENGR 213

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1 Part A

1. The keyword used to transfer control from a function back to the calling function is:

   A return statement

2. After a function returns, its local variables keep their values, which serve as their initial values the next time the function is called.

   False

3. A function declaration just specifies the function's interface while a function definition lists the contents of a function.

   True

2 Part B

1 Write a program in C to find the sum of the series 1!/1+2!/2+3!/3+4!/4+5!/5 using the Function

```c
/*////////////////////////////////////////////
//   Title:         HW4_Q1.c
//   Author:        Ryan L.
//   Description:   program to find the sum of the series 1!/1+2!/2+3!/3+4!/4+5!/5 using the Function
*////////////////////////////////////////////

// INCLUDES
#include <stdio.h>

// Helper function

int seriesSum(int num){
    int sum = 0;
    int fact = 1;
    for(int i = 1; i <= num; i++){
        fact = 1;
        for(int j = 1; j <= i; j++){
            fact *= j;
        }
        sum += fact/i;
    }
    return sum;
}


int main(){
    // Declare & Initialize variables (test case: 5 ) (output: 34)
    int num = 5;
    int sum;

    //Work
    sum = seriesSum(num);
    printf("Sum of the series is: %d\n", sum);

    return 0;
}

```

2 Write a program in C to check Armstrong and perfect numbers using the function

```c
/*////////////////////////////////////////////
//    Title:          HW4_Q2.c
//    Author:         Ryan L.
//    Description:    program to check Armstrong and perfect numbers using the function
*////////////////////////////////////////////


// INCLUDES
#include <stdio.h>

// HELPERS
int isArmstrong(int num){
    int sum = 0;
    int temp = num;
    int digit;
    while(temp != 0){
        digit = temp % 10;
        sum += digit * digit * digit;
        temp /= 10;
    }
    if(sum == num){
        return 1;
    }
    return 0;
}

int isPerfect(int num){
    int sum = 0;
    for(int i = 1; i < num; i++){
        if(num % i == 0){
            sum += i;
        }
    }
    if(sum == num){
        return 1;
    }
    return 0;
}


int main(){
    // Declare variables (test case: 371) (output: is an Armstrong number, is not perfect number)
    int num;




    // Initialize variables
    num = 371;

    //Work

    printf("%d %s \n", num, isArmstrong(num) ? "is an Armstrong number " : "is not an Armstrong
    number ");
    printf("%d %s \n", num, isPerfect(num) ? "is a perfect number" : "is not a perfect number");




    return 0;
}

```