

Programming with C

Assignment 6

Due: Next Section.

Notes: This assignment is individual assignment, every student should complete it by himself.

1. (5 points) Create a C++ project and copy the following code to it, then answer the questions:

(This part to understand the function and the scope)

```
1. #include <iostream>
2. using namespace std;
3.
4. int fact(int x){
5.
6.     int result=1;
7.     for(int i=1;i<=x;i++){
8.         result*=i;
9.     }
10.
11.     return result;
12. }
13.
14. int main(){
15.
16.     int x;
17.     cout<<"Enter integer number:";
18.     cin>>x;
19.
20.     int r;
21.
22.     r=fact(x);
23.     cout<<"The factorial of \"<x<<\" \" =\"<r<<endl;
24.
25.     return 0;
26. }
```

- Compile and run this program then input 4. What is the output?
- Rename every `x` in function `fact` with `y`, then repeat question (a), does the output change? Why?
- Rename every `result` in function `fact` with `r`, then repeat question (a), does the output change? Why?
- Change first `int` in line 4 to `double`, then repeat question (a), report the error, and explain the reason.

- e) Revert back to the original program, change second `int` in line 4 to `double`, then repeat question (a), indicate the error, and explain the reason.
 - f) Revert back to the original program, add `int x=2;` to line 3, then repeat question (a), what is the output?.
 - g) Revert back to the original program, add `int x=2` to line 3 and remove line 16, then compile the program. Does the program gives error? Why?.
 - h) Revert back to the original program, add `int x=2` to line 3 and remove line 16, 20, then compile the program. What is the output?.
 - i) Revert back to the original program, change the code to print the combination of two given number `n, r`. Compile and run this program then input `5,3`. What is the output? (*note: a combination of two number $n,r = n!/r!(n-r)!$*).
2. (5 points) Write a complete C program with a function to compute the power, then input `n, z` from the user and output the result based on the following equation.

$$\text{Output} = \frac{1 - (n + 1)z^n + nz^{n+1}}{(1 - z)^2}$$