**EMPLID** 

NAME: FIRST LAST

SEAT 5 ROW



**NUMBER** 



1. (30 points) Answer the following questions.

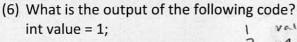
(1) What is the value of 6/5 \* r \* r \* r when variable r is 2 in C++?

(2) Declare function foo whose input parameter is int and return is a string. You just need to write the function header, no implementation is needed.

(3) Write code to generate a random int in [100, 300].

(5) Suppose we generate a.out, and we would like redirect the input from console to a file called data.txt. What is the command?

./a.out < datatext



$$val \cdot i = 1$$
  
 $3 \quad 1 \cdot 3 = 3$   
 $5 \quad 3 \cdot 5 = 15$ 

cout << value;

for 100 P

(7) Write code to declare an array of int with size 100, call it scores. Initialize each element by 0.

(8) What is the output of the following code?

ode? 
$$\int_{-2}^{20} |2| = 0$$
 false  $\int_{-20}^{20} |2| = 0$  folse  $\int_{-20}^{20} |2| = 0$ 

ì

cout << endl;

}

(9) Write a condition to represent that both x and y are in the range of [0, 100], where both ends are included. Suppose x and y are properly declared and initialized.

$$((x <= 100) && (x>= 0)) && ((y<= 100) && (y>= 0)).$$

\*(10) Suppose n is an int, write code to throw away its last digit? For example, suppose n is 21, after your code, n should be 2.

## 2. (30 points) Short answer questions

```
(2.1) Given three integers a, b and c, properly declared and initialized, write code to find
out the largest number.
     int max; Il targest number
                                                      cout « "Largest number:
     if ((a>6) 8& (a>c)) {
                                                       coutee max ex endlj
      max = a;
3 else if ((b>a) && (b>c)) {
              max=bi
       3 else & x=c; 3
(2.2) Read codes and write output.
void foo(int& a, int& b);
int main()
  int a = 11;
  int b = 6;
  foo(a, b);
  cout << "a = " << a << endl;
  cout << "b = " << b << endl;
  int c = 8;
  int d = 2;
  foo(c, d);
  cout << "c = " << c << endl;
  cout << "d = " << d << endl;
  return 0;
}
void foo(int& a, int& b)
  int temp;
  if (a % b != 0)
                           temp=11
   temp = a;
   a = b;
                            a=61
   b = temp;
                            6 = 11;
  }
}
```

```
(2.3) Read code and answer questions.
```

```
string foo(int num)
{
   string result = "";
   do {
    result = to_string(num % 2) + result;
     //to_string convert an int to the corresponding string
     num /= 2;
   } while (num != 0);
   return result;
}
```

What are the return for foo(6) and foo(8)?

$$(6902)+111 = 1011$$

$$(8\%) = 2) + "" = "0"$$

$$1000 | = 2 \Rightarrow 4$$

$$8/2$$

$$(2\%) + 400" = 1000"$$

$$(3\%2)+"0" = "10"$$
 $1$ 
 $1$ 
 $1$ 
 $1/(2) + "10" = "110"$ 
 $1/(2) + "10" = "110"$ 
 $1/(2) + "10" = "110"$ 

3. (20 points) Define a function, for a given string str, return a string whose letters are the even-index letters in str with the same order. That is, suppose str is "abc", then return "ac".

String even (string str) & int len = str.length (); String output = ""; for (int i=0; i < len; i+=2) { Output += str[i]; 3 return output;

3

- 4. (20 points) Write code inside main function, no need to include libraries.
  - (1) Enter two numbers a and b, which can contain decimals 300 ble
  - (2) If a is larger than or equal to b, then calculate and output to the screen result of  $\sqrt{a-b} + b^a$ .
  - (3) Otherwise, calculate and print  $\frac{a+5}{3(b-a)}$ .

double result; double a; double b;

couter "Enter a: "i
cin >> aj

CONT KK "IN Enter b: "i

If (a>=b) {

result = ((sqrt(a-b)) + (pow(b,a)));

3 else {

result = ( (a+5) / (3\* (b-a)));

3

cout << "The result is: "<< result << endl;