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CSC 161

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1. Consider the definition of the following class:

class employee                                                            //Line 1   
{                                                                             //Line 2  
public:                                                                     //Line 3  
employee();                                                            //Line 4  
employee(string, int, double);                                     //Line 5  
employee(int, double);                                             //Line 6  
employee(string);                                                    //Line 7

void setData(string, int, double);                                //Line 8  
void print() const;                                                  //Line 9  
void updateSalary(double x);                                    //Line 10  
int getNumOfServiceYears() const;                           //Line 11  
double getSalary() const;                                         //Line 12

private:                                                                //Line 13  
string name;                                                         //Line 14  
int numOfServiceYears;                                          //Line 15  
double salary;                                                      //Line 16  
};                                                                      //Line 17

* 1. Give the line number containing the constructor that is executed in each of the following declarations:
     1. employee tempEmployee;
        1. Line 4
     2. employee newEmployee("Harry Miller", 0, 25000);
        1. Line 5
     3. employee oldEmployee("Bill Dunbar", 15, 55000);
        1. Line 5
  2. Write the definition of the constructor in Line 4 so that the instance variables are initialized to "", 0, and 0.0, respectively.

employee::employee()

{

name = "";

numOfServiceYears = 0;

salary = 0.0;

}

* 1. Write the definition of the constructor in Line 5 so that the instance variables are initialized according to the parameters.

employee::employee(string name, int years, double salary)

{

name = name;

numOfServiceYears = years;

salary = salary;

}

* 1. Write the definition of the constructor in Line 6 so that the instance variable name is initialized to the empty string and the remaining instance variables are initialized according to the parameters.

employee::employee(int years, double salary)

{

name = "";

numOfServiceYears = years;

salary = salary;

}

1. Consider the following statements:

class temporary   
{   
public:   
void set(string, double, double);   
void print();   
double manipulate();   
void get(string&, double&, double&);   
void setDescription(string);   
void setFirst(double);   
void setSecond(double);   
string getDescription() const;   
double getFirst()const;   
double getSecond()const;

temporary(string = "", double = 0.0, double = 0.0);

private:   
string description;   
double first;   
double second;   
};

Now answer the following questions:

* 1. Write the definition of the member function set so that the instance variables are set according to the parameters.

void set(string description, double first, double second)

{

description = description;

first = first;

second = second;

}

* 1. Write the definition of the member function manipulate that returns a decimal number as follows: If the value of description is "rectangle", it returns first \* second; if the value of description is "circle", it returns the area of the circle with radius first; if the value of description is "sphere", it returns the volume of the sphere with radius first; if the value of description is "cylinder", it returns the volume of the cylinder with radius first and height second; otherwise, it returns the value -1.
  2. Write the definition of the function print to print the values of the instance variables and the values returned by the function manipulate. For example, if description = "rectangle", first = 8.5, and second = 5, it should print: rectangle: length = 8.50, width = 5.00, area = 42.50
  3. Write the definition of the constructor so that it initializes the instance variables using the function set.
  4. Write the definition of the remaining functions to set or retrieve the values of the instance variables. Note that the function get returns the values of all instance variables.

1. What is the output of the following statements?

temporary object1;   
temporary object2("rectangle", 8.5, 5);   
temporary object3("circle", 6, 0);   
temporary object4("cylinder", 6, 3.5);

cout << fixed << showpoint << setprecision(2);

object1.print();   
object2.print();   
object3.print();   
object4.print();   
object1.set("sphere", 4.5, 0);   
object1.print();

1. What is the main difference between a struct and a class?
   1. By default, all members of a struct are public, and all members of a class are private.
2. Which of the following characters appears before a destructor’s name?
   1. The character that appears before a destructors name is c. ~.

a. #

b. !

c. ~

d. $