

CS 201 Lab

Midterm Exam

Duration: 2 hour 30 minutes

Section 1

Answer any three from question no 1-6.

1. The de-reference operator (*) used before a pointer variable to get the:
 - i. Data pointed by the pointer.
 - ii. Address of the pointer.
2. When an array is passed as a reference variable, we can modify the values stored in the array.
True / False
3. A constructor can have a return type.
True / False
4. A class member variable declared without public/private modifier, is by default:
 - i. Public
 - ii. Private
5. A class can inherit from only one class.
True / False
6. This is a valid function overloading:

```
int sum(int op1, int op2);  
double sum(int op1, int op2);
```


Right / Wrong.

Section 2

Answer one from question no 7-8.

7. What will be the output of the following code:

```
void increment(int* salary, int rate) {  
    int* temp;  
    temp = salary;  
    *temp += *temp * (rate / 100);  
}  
  
int main() {  
    int *salary;  
    int initial = 1000;  
    salary = &initial;  
    increment(salary, 15);  
    cout << * salary << endl;  
}
```

8. Will this program compile correctly, if not why?

```
string displayName(string first, string last) {  
    return first + last;  
}  
string displayName(string& first, string& last) {  
    return first + last;  
}  
int main() {  
    string s1 = "John";  
    string s2 = "Doe";  
    string s3 = displayName(s1, s2);  
}
```

Section 3

Write a program that displays items and produces a purchase bill when customer buys some. The program will have some predefined items stored in an array. It will ask the customer to add items in the cart and finally output a bill statement.

The Item class

Create an Item class that will hold item's name and price. As we did in previous labs, create two files: Item.h and Item.cpp. Here's the class diagram:

Item
- m_name: string - m_price: double
+ Item() + Item(name: string, price: double) + setName(name: string) : void + getName(): string + setPrice(price: double): void + getPrice(): double

Input

1. Create a *main.cpp* file and a *main()* method.
2. Create an array of *Item* objects. The size will be six. Put following items in the array:

Item name	Price
Laptop	1250.00
Printer	499.99
Desktop	399.99
Monitor	125.50
Keyboard	45.00
Mouse	12.99

3. Print the item names and prices in the console.

Sample console output:

```
#   Item name   Price  
1.  Laptop     1250.00
```

```
2.  Printer      499.99
[Print all the items in this manner]
7.  Finish
```

4. Prompt for user input until he chooses finish (i.e. press 7). [Note: you may use a while loop.]

Output

Print the total purchase amount. Sample output:

```
Items purchased: 3
Total: 1762.98
```

Extra credit

List all the items purchased before the total amount:

```
Items purchased: 3
1.  Laptop      1250.00
2.  Printer     499.99
3.  Mouse       12.99
Total: 1762.98
```