



Indian Institute of  
Information Technology,  
Ranchi

## CP-II ASSIGNMENT FILE

NAME : TUSHAR JAIN

REG NO : 2019UGCS001R

BRANCH : CSE

*1. Write a C++ program to create a class named “COVID” having 10 people’s details of Fever,Cough,Breathlessness. If the person having two or more symptoms then display him/her as Covid suspect.*

*SOURCE CODE :*

```
#include<iostream>
using namespace std;
class Covid
{
public:
    char name[25];
    string fever;
    string cough;
    string breathlessness;

};

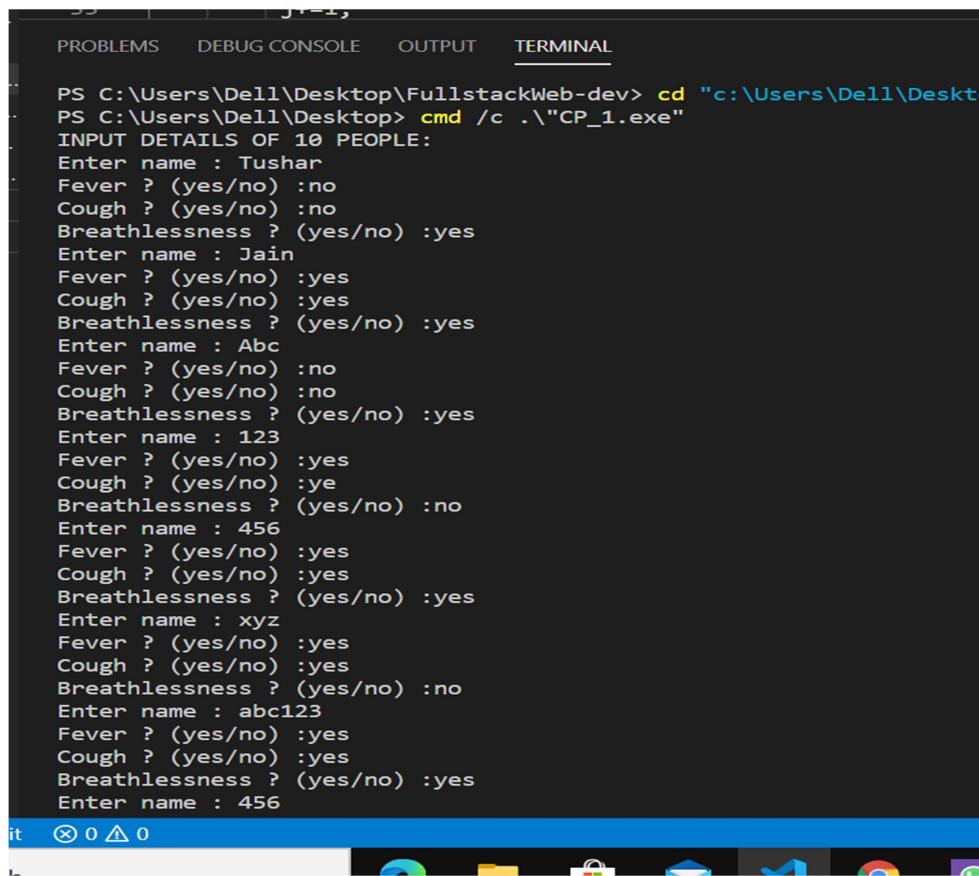
int main()
{
    Covid person[10];
    cout<<"INPUT DETAILS OF 10 PEOPLE:\n";
    for(int i=0;i<10;i++)
    {
        cout<<"Enter name : ";
        cin>>person[i].name;
        cout<<"Fever ? (yes/no) :";
        cin>>person[i].fever;
        cout<<"Cough ? (yes/no) :";
        cin>>person[i].cough;
        cout<<"Breathlessness ? (yes/no) :";
        cin>>person[i].breathlessness;
    }
    cout<<endl;
    for(int i=0;i<10;i++)
    {
```

```

int j=0;
if(person[i].breathlessness=="yes")
    j+=1;
if(person[i].fever=="yes")
    j+=1;
if(person[i].cough=="yes")
    j+=1;
if(j<2)
    cout<<person[i].name<<" is not COVID suspect"<<"\n";
else
    cout<<person[i].name<<" is COVID suspect"<<"\n";
}
return 0;
}

```

*OUTPUT:*



The screenshot shows a terminal window with the following content:

```

PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL
PS C:\Users\DELL\Desktop\FullstackWeb-dev> cd "c:\Users\DELL\Desktop\FullstackWeb-dev"
PS C:\Users\DELL\Desktop> cmd /c .\"CP_1.exe"
INPUT DETAILS OF 10 PEOPLE:
Enter name : Tushar
Fever ? (yes/no) :no
Cough ? (yes/no) :no
Breathlessness ? (yes/no) :yes
Enter name : Jain
Fever ? (yes/no) :yes
Cough ? (yes/no) :yes
Breathlessness ? (yes/no) :yes
Enter name : Abc
Fever ? (yes/no) :no
Cough ? (yes/no) :no
Breathlessness ? (yes/no) :yes
Enter name : 123
Fever ? (yes/no) :yes
Cough ? (yes/no) :ye
Breathlessness ? (yes/no) :no
Enter name : 456
Fever ? (yes/no) :yes
Cough ? (yes/no) :yes
Breathlessness ? (yes/no) :yes
Enter name : xyz
Fever ? (yes/no) :yes
Cough ? (yes/no) :yes
Breathlessness ? (yes/no) :no
Enter name : abc123
Fever ? (yes/no) :yes
Cough ? (yes/no) :yes
Breathlessness ? (yes/no) :yes
Enter name : 456

```

```
Cough ? (yes/no) :yes
Breathlessness ? (yes/no) :yes
Enter name : hello
Fever ? (yes/no) :yes
Cough ? (yes/no) :yes
Breathlessness ? (yes/no) :yes
Enter name : hjk
Fever ? (yes/no) :yes
Cough ? (yes/no) :no
Breathlessness ? (yes/no) :no

Tushar is not COVID suspect
Jain is COVID suspect
Abc is not COVID suspect
123 is not COVID suspect
456 is COVID suspect
xyz is COVID suspect
abc123 is COVID suspect
456 is COVID suspect
hello is COVID suspect
hjk is not COVID suspect
PS C:\Users\DELL\Desktop>
```

*2. Write a Program using class to process Shopping List for a Departmental Store. The list include details such as the Code No and Price of each item and perform the operations like Adding, Deleting Items to the list and Printing the Total value of a Order.*

*SOURCE CODE:*

```
#include<iostream>
using namespace std;
const int m=50;
class ITEMS
{
    int itemCode[m];
    float itemPrice[m];
    int count;
public:
    void CNT(void){count=0;}
    void getitem(void);
    void displaySum(void);
    void remove(void);
```

```
void displayItems(void);
};

void ITEMS :: getitem(void)
{
    cout<<"Enter item code";
    cin>>itemCode[count];
    cout<<"Enter Item cost";
    cin>>itemPrice[count];
    count++;
}
void ITEMS :: displaySum(void)
{
    float sum=0;
    for(int i=0;i<count;i++)
        sum=sum+itemPrice[i];
    cout<<"\n Total Value:"<<sum<<"\n";
}
void ITEMS :: remove(void)
{
    int a;
    cout<<"Enter Item Code";
    cin>>a;
    for(int i=0;i<count;i++)
        if(itemCode[i] == a)
            itemPrice[i]=0;
}
void ITEMS :: displayItems(void)
{
    cout<<"\n Code Price\n";
    for(int i=0;i<count;i++)
    {
        cout<<"\n"<<itemCode[i];
        cout<<" " <<itemPrice[i];
    }
    cout<<"\n";
```

```

}

int main()
{
ITEMS order;
order.CNT();
int x;
do {
cout<<"\n You can do the following;"<<"Enter appropriate number\n";
cout<<"\n1 : Add an Item";
cout<<"\n2 : Display Total Value";
cout<<"\n3 : Delete an Item";
cout<<"\n4 : Display all items";
cout<<"\n5 : Quit";
cout<<"\n\n What is your option?";
cin>>x;

switch(x)
{
case 1 : order.getitem();
break;
case 2 : order.displaySum();
break;
case 3 : order.remove();
break;
case 4 : order.displayItems();
break;
default : cout<<"Error in input";
}
}while(x!=5);
return 0;
}

```

*OUTPUT :*

```
2
PS C:\Users\DELL\Desktop> cmd /c .\"CP_2.exe"
Bo...
Bo...
You can do the following;Enter appropriate number
1 : Add an Item
2 : Display Total Value
3 : Delete an Item
4 : Display all items
5 : Quit

What is your option?1
Enter item code123
Enter Item cost200

You can do the following;Enter appropriate number

1 : Add an Item
2 : Display Total Value
3 : Delete an Item
4 : Display all items
5 : Quit

What is your option?4
Code Price

123 200

You can do the following;Enter appropriate number

1 : Add an Item
2 : Display Total Value
64-bit ⑧ 2 △ 0
Search

```

*3. Write a Program which creates & uses array of object of a class.( for eg. implementing the list of Managers of a Company having details such as Name, Age, etc..).*

*SOURCE CODE :*

```
#include<iostream>
using namespace std;
class employee
{
    char name [30];
    float age;
```

```

public:
void getdata(void);
void putdata(void);
};
void employee :: getdata(void)
{
cout<<"Enter Name";
cin>>name;
cout<<"Enter Age";
cin>>age;
}
void employee :: putdata(void)
{
cout<<"Name:"<<name<<"\n";
cout<<"Age: "<<age<<"\n";
}
const int size=3;
int main()
{
employee manager[size];
for(int i=0; i<size; i++)
{
cout<<"\n Details of manager"<<i+1<<"\n";
manager[i].getdata();
}
cout<<"\n";
for(int i=0; i<size; i++)
{
cout<<"\n Manager"<<i+1<<"\n";
manager[i].putdata();
}
return 0;
}

```

*OUTPUT :*

```
PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL

PS C:\Users\DELL> cd "c:\Users\DELL\Desktop"
PS C:\Users\DELL\Desktop> cmd /c .\"CP_3.exe"

    Details of manager1
Enter Name : Tushar
Enter Age :18

    Details of manager2
Enter Name :Abc
Enter Age :19

    Details of manager3
Enter Name :123
Enter Age :20

    Manager1
Name:Tushar
Age: 18

    Manager2
Name:Abc
Age: 19

    Manager3
Name:123
Age: 20
PS C:\Users\DELL\Desktop>
```

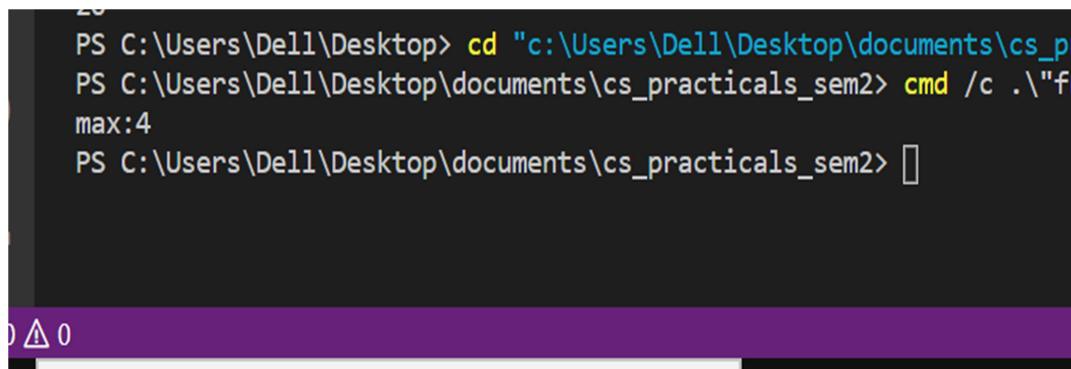
**4. Write a Program to find Maximum out of Two Numbers using friend function. Note: Here one number is a member of one class and the other number is member of some other class.**

*SOURCE CODE :*

```
#include<iostream>
using namespace std;
class A;
class B
{int b=2;
public: friend int max(A a,B b);
};
class A
```

```
{int a=4;  
public: friend int max (A a,B b);};  
int max(A a,B b)  
{if(a.a>b.b)  
return a.a;  
else  
return b.b;  
}  
int main(void)  
{ A a;  
B b;  
cout<<"max:"<<max(a,b);  
return 0 ;  
}
```

*OUTPUT :*



```
PS C:\Users\DELL\Desktop> cd "c:\Users\DELL\Desktop\documents\cs_p  
PS C:\Users\DELL\Desktop\documents\cs_practicals_sem2> cmd /c .\f  
max:4  
PS C:\Users\DELL\Desktop\documents\cs_practicals_sem2> []  
0 △ 0
```

*5. Write a Program using copy constructor to copy data of an object to another object.*

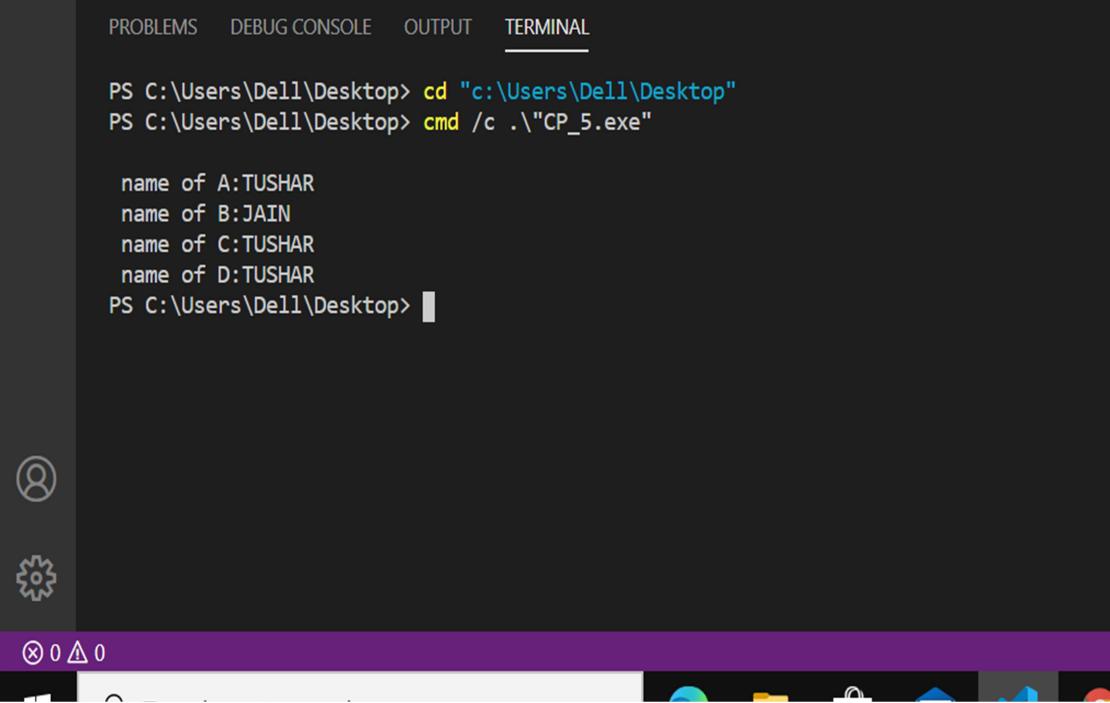
*SOURCE CODE :*

```
#include<iostream>  
#include<string>  
using namespace std;  
class run  
{  
    string name;
```

```
public:  
run(){}
run(string a)
{
name = a;
}
run(run & x)
{
name = x.name;
}
void display(void)
{
cout<<name;
}
};

int main()
{  
  
run A("TUSHAR");
run B("JAIN");
run C = A;
run D;
D = A;
cout<<"\n name of A:";  
A.display();
cout<<"\n name of B:";  
B.display();
cout<<"\n name of C:";  
C.display();
cout<<"\n name of D:";  
D.display();  
  
return 0;
}
```

*OUTPUT :*



```
PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL

PS C:\Users\DELL\Desktop> cd "c:\Users\DELL\Desktop"
PS C:\Users\DELL\Desktop> cmd /c .\CP_5.exe

name of A:TUSHAR
name of B:JAIN
name of C:TUSHAR
name of D:TUSHAR
PS C:\Users\DELL\Desktop>
```

*6. Write a program to design a class representing complex numbers and having the functionality of performing addition & multiplication of two complex numbers using operator overloading.*

*SOURCE CODE :*

```
#include <iostream>
using namespace std;
class complex
{
private:
    float real,
    imag;
public:
    complex( )
    {
    }
    complex( float r, float i )
```

```
{  
real = r;  
imag = i;  
}  
void getdata( )  
{  
float r,  
i;  
cout << endl << "Enter real and imaginary part ";  
cin >> r >> i;  
real = r;  
imag = i;  
}  
void setdata( )  
{  
real = r;  
imag = i;  
}  
void displaydata( )  
{  
cout << endl << "real = " << real;  
cout << endl << "Imaginary = " << imag;  
}  
complex operator +( complex c )  
{  
complex t;  
t.real = real + c.real;  
t.imag = imag + c.imag;  
}  
complex operator *( complex c )  
{  
complex t;  
t.real = real * c.real - imag * c.imag;  
t.imag = real * c.imag + c.real * imag;  
return t;
```

```
    }
};

void main( )
{
complex c1,
c2 ( 1.2, -2.5 ),
c3,
c4;
c1.setdata( 2.0, 2.0 );
c3 = c1 + c2;
c3.displaydata( );
c4.getdata( );
complex c5 ( 2.5, 3.0 ),
c6;
c6 = c4 * c5;
c6.displaydata( );
complex c7;
c7 = c1 + c2 * c3;
c7.displaydata( );
}
```

*OUTPUT :*

```
enter the real part= 4
enter img part= 7
enter real= 3
enter img= 5
7+12i
-1+2i
-23+41i
-----
Process exited after 18.6 seconds with return value 0
Press any key to continue . . .
```

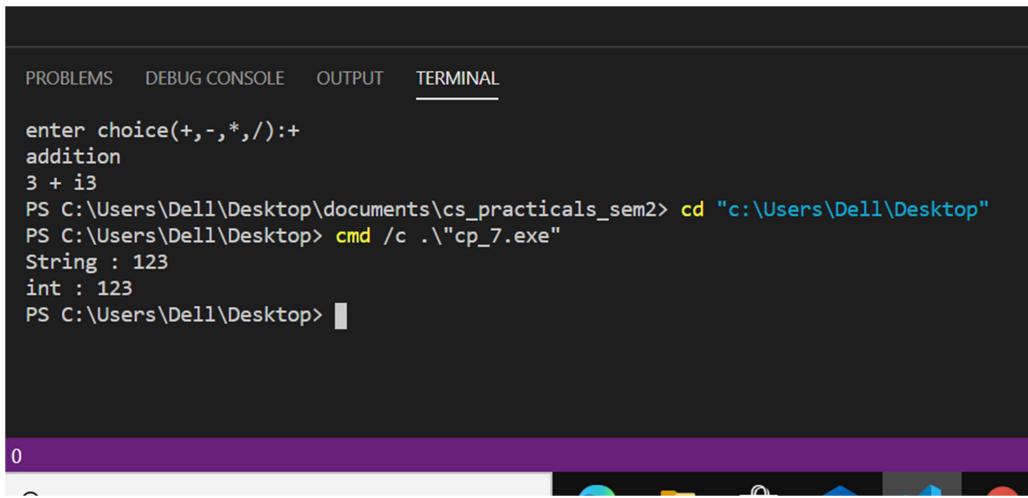
*7. write a program to show conversion from string to int and vice-versa.*

*SOURCE CODE :*

```
#include <iostream>
using namespace std;
#include <stdlib.h>
#include <string.h>
class string
{
private:
    char str[ 20 ];
public:
    string( )
    {
        str[ 0 ] = '\0';
    }
    string( char * s )
    { strcpy( str, s ); }
    string( int a )
    { itoa( a, str, 10 ); }
    operator int( )
    {
        int i = 0, l, ss = 0, k = 1;
        l = strlen( str ) - 1;
        while( l >= 0 )
        { ss = ss + ( str[ l ] - 48 ) * k;
        l--; k *= 10; }
        return ( ss );
    }
    void displaydata( )
    { cout << str; } };
void main( )
{ string s1 = 123;
cout << endl << "s1=";
```

```
s1.displaydata( );
s1 = 150;
cout << endl << "s1=";
s1.displaydata( );
string s2 ( "123" );
int i = int( s2 );
cout << endl << "i=" << i;
string s3 ( "456" );
i = s3;
cout << endl << "i=" << i;
}}
void displaydata( )
{ cout << dt; }
date( dmy t )
{
int d = t.getday( );
int m = t.getmth( );
int y = t.getyr( );
char temp[ 3 ];
itoa( d, dt, 10 );
strcat( dt, "\t" );
itoa( m, temp, 10 );
strcat( dt, temp );
strcat( dt, "/" );
itoa( y, temp, 10 );
strcat( dt, temp );
} };
void main( )
{date d1;
dmy d2 ( 17, 11, 94 );
d1 = d2;
cout << endl << "d1=";
d1.displaydata( );
cout << endl << "d2=";
d2.displaydata( ); }
```

*OUTPUT :*



The screenshot shows a terminal window with the following text output:

```
PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL

enter choice(+,-,*,/):+
addition
3 + i3
PS C:\Users\Dell\Desktop\documents\cs_practicals_sem2> cd "c:\Users\Dell\Desktop"
PS C:\Users\Dell\Desktop> cmd /c ."cp_7.exe"
String : 123
int : 123
PS C:\Users\Dell\Desktop>
```

**8. Write a program to overload new/delete operators in a class.**

*SOURCE CODE :*

```
#include <iostream>
#include <stdlib.h>
#include <string.h>
#include <new.h>
using namespace std;
const int MAX = 5;
const int FREE = 0;
const int OCCUPIED = 1;
void memwarning( )
{
    cout << endl << "Gone empty !!!";
    exit( 1 );
}
class employee
{
private:
    char name[ 20 ];
```

```

int age;
float sal;
public:
void *operator new(size_t bytes);
void operator delete( void * q );
void setdata( char * n, int a, float s );
void showdata( );
~employee( );
};

struct pool
{
    employee obj;
    int status;
};

int flag = 0;
struct pool * p = NULL;
void * employee::operator new( size_t sz )
{
    int i;
    if( flag == 0 )
    {
        p = ( pool * )malloc( sz * MAX );
        if( p == NULL )
            memwarning( );
        for( i = 0; i < MAX; i++ )
            p[ i ].status = FREE;
        flag = 1;
        p[ 0 ].status = OCCUPIED;
        return &p[ 0 ].obj;
    }
    else
    {
        for( i = 0; i < MAX; i++ )
    }
}

```

```

if( p[ i ].status = FREE )
{
p[ i ].status = OCCUPIED;
return &p[ i ].obj;
}
}
memwarning( );
}
}

void employee::operator delete( void * q )
{
if( q == NULL )
return;
for( int i = 0; i < MAX; i++)
{
if( q == &p[ i ].obj )
{
p[ i ].status = FREE;
strcpy( p[ i ].obj.name, "" );
p[ i ].obj.age = 0;
p[ i ].obj.sal = 0.0;
}
}
}

void employee::setdata( char * n, int a, float s )
{
strcpy( name, n );
age = a;
sal = s;
}

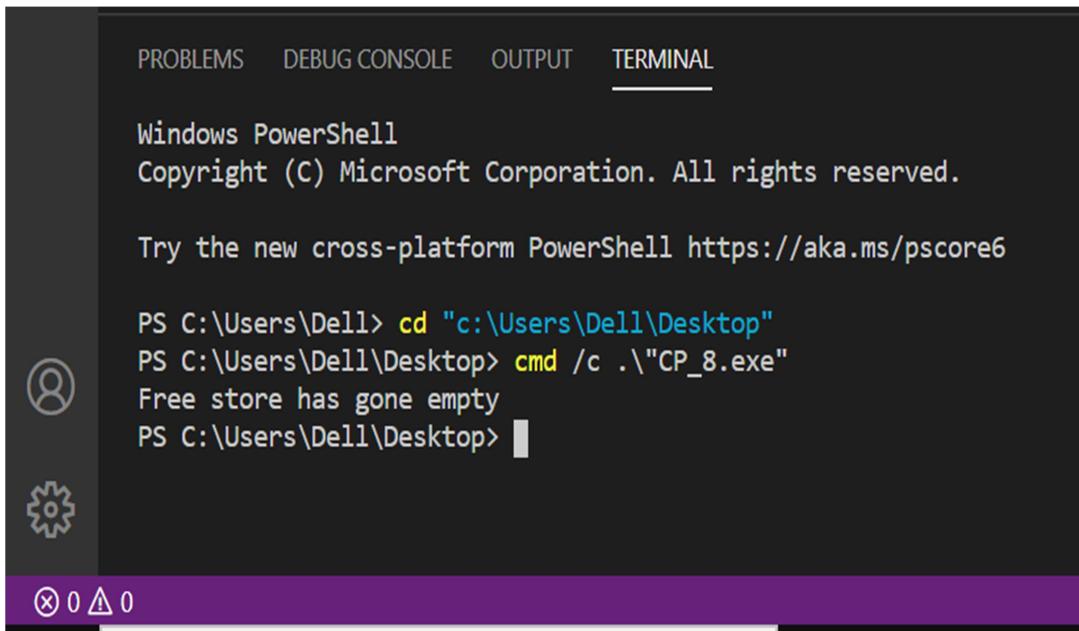
void employee::showdata( )
{
cout << endl << name << "\t" << age << "\t" << sal;
}

employee::~employee( )

```

```
{  
    cout << endl << "reached destructor";  
    free( p );  
}  
void main( )  
{  
    void memwarning( );  
    set_new_handler( memwarning );  
    employee * e1,*e2,*e3,*e4,*e5,*e6;  
    e1 = new employee;  
    e1->setdata( "ajay", 23, 4500.50 );  
    e2 = new employee;  
    e2->setdata( "amol", 25, 5500.50 );  
    e3 = new employee;  
    e3->setdata( "anil", 26, 3500.50 );  
    e4 = new employee;  
    e4->setdata( "anuj", 30, 6500.50 );  
    e5 = new employee;  
    e5->setdata( "atul", 23, 4200.50 );  
    e1->showdata( );  
    e2->showdata( );  
    e3->showdata( );  
    e4->showdata( );  
    e5->showdata( );  
    delete e4;  
    delete e5;  
    e4->showdata( );  
    e5->showdata( );  
    e4 = new employee;  
    e5 = new employee;  
    e6 = new employee;  
    cout << endl << "Done!!";  
}
```

*OUTPUT :*



The screenshot shows a terminal window in Visual Studio Code. The title bar includes tabs for PROBLEMS, DEBUG CONSOLE, OUTPUT, and TERMINAL, with TERMINAL being the active tab. The terminal itself is a Windows PowerShell window. It displays the standard PowerShell welcome message, followed by a command to try the cross-platform PowerShell, and then a command to run a file named 'CP\_8.exe'. The command 'cmd /c .\\"CP\_8.exe"' is shown, along with its output: 'Free store has gone empty'. The bottom status bar of the terminal window shows icons for user status (0), notifications (0), and battery level.

```
PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Dell> cd "c:\Users\Dell\Desktop"
PS C:\Users\Dell\Desktop> cmd /c .\"CP_8.exe"
Free store has gone empty
PS C:\Users\Dell\Desktop>

⊗ 0 △ 0
```

*9. Write a program in C++ to highlight the difference between overloaded assignment operator and copy constructor.*

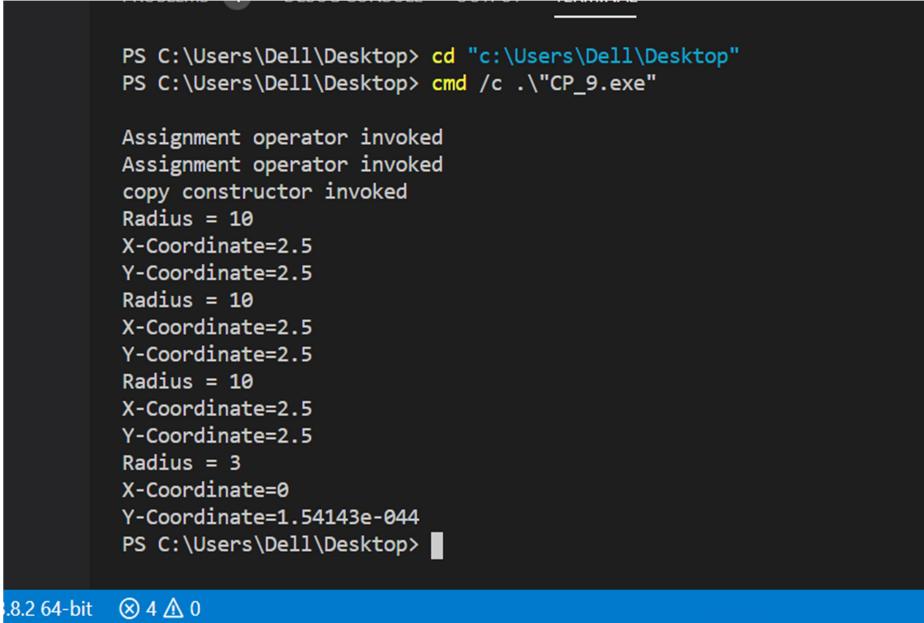
*SOURCE CODE :*

```
#include <iostream>
using namespace std;
class circle
{
private:
    int radius;
    float x, y;
public:
    circle( )
    {
    }
    circle( int rr, float xx, float yy )
    {
        radius = rr;
```

```
x = xx;
y = yy;
}
circle operator =( circle & c )
{
cout << endl << "Assignment operator invoked";
radius = c.radius;
x = c.x;
y = c.y;
}
circle( circle & c )
{
cout << endl << "copy constructor invoked";
radius = c.radius;
x = c.x;
y = c.y;
}
void showdata( )
{
cout << endl << "Radius = " << radius;
cout << endl << "X-Coordinate=" << x;
cout << endl << "Y-Coordinate=" << y;
}
};

void main( )
{
circle c1 ( 10, 2.5, 2.5 );
circle c2,c4;
c4 = c2 = c1;
circle c3 = c1;
c1.showdata( );
c2.showdata( );
c3.showdata( );
c4.showdata( );
}
```

*OUTPUT :*



```
PS C:\Users\DELL\Desktop> cd "c:\Users\DELL\Desktop"
PS C:\Users\DELL\Desktop> cmd /c .\CP_9.exe

Assignment operator invoked
Assignment operator invoked
copy constructor invoked
Radius = 10
X-Coordinate=2.5
Y-Coordinate=2.5
Radius = 10
X-Coordinate=2.5
Y-Coordinate=2.5
Radius = 10
X-Coordinate=2.5
Y-Coordinate=2.5
Radius = 3
X-Coordinate=0
Y-Coordinate=1.54143e-044
PS C:\Users\DELL\Desktop>
```

*10. Write a Program to allocate memory dynamically for an objects of a given class using class's constructor.*

*SOURCE CODE :*

```
#include<iostream>
#include<string.h>
using namespace std;
class String
{
    char *name;
    int length;
public:
    String()
    {
        length = 0;
        name = new char[length +1];
    }
    String (char *s)
```

```

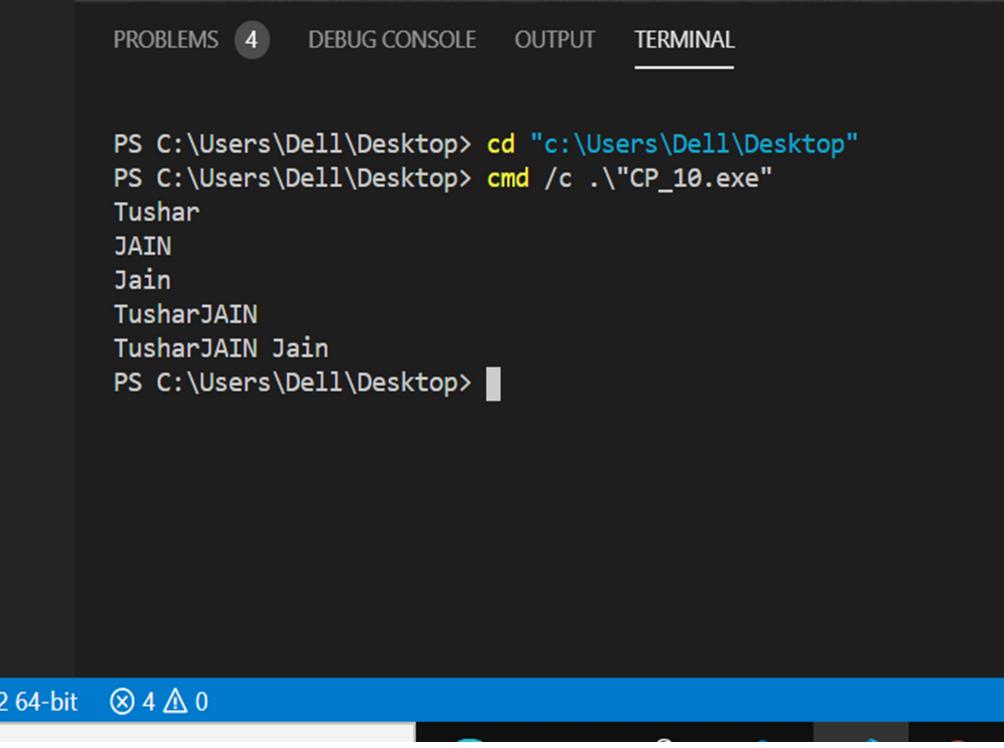
{
length = strlen(s);
name= new char[length + 1];
strcpy(name, s);
}
void display(void)
{
cout<<name<<"\n";
}
void join(String &a, String &b);
};
void String :: join (String &a, String &b)
{
length = a.length + b.length;
delete name;
name = new char [length + 1];
strcpy(name,a.name);
strcat(name, b.name);
};
int main()
{

char *first = "Joseph";
String name1(first), name2("Louis "), name3("Lagrange"),s1,s2;
s1.join(name1, name2);
s2.join(s1, name3);
name1.display();
name2.display();
name3.display();
s1.display();
s2.display();

return 0;
}

```

*OUTPUT :*



The screenshot shows a terminal window within the Visual Studio Code interface. The tab bar at the top includes 'PROBLEMS' (with a '4' badge), 'DEBUG CONSOLE', 'OUTPUT', and 'TERMINAL'. The terminal content displays the following command-line session:

```
PS C:\Users\DELL\Desktop> cd "c:\Users\DELL\Desktop"
PS C:\Users\DELL\Desktop> cmd /c .\CP_10.exe
Tushar
JAIN
Jain
TusharJAIN
TusharJAIN Jain
PS C:\Users\DELL\Desktop>
```

The status bar at the bottom indicates '2 64-bit' and shows icons for file operations.