UNIVERSITY OF SARGODHA

LAHORE CAMPUS

Final Booklet of Lab Work

Submitted to:

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Semester:

2nd

Section:

A

Submitted By:

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Week 1

1-Program Code:

```cpp
#include<iostream>
using namespace std;
class A{
        private:
                int a;
                public:
                A(){
                        a=5;
                }
                friend class oop;
};
class oop{
        public:
                void show(A b)
                {
                        cout<<"b="<<b.a;
                }
};
int main(){
        A c;
        oop d;
        d.show(c); }
```
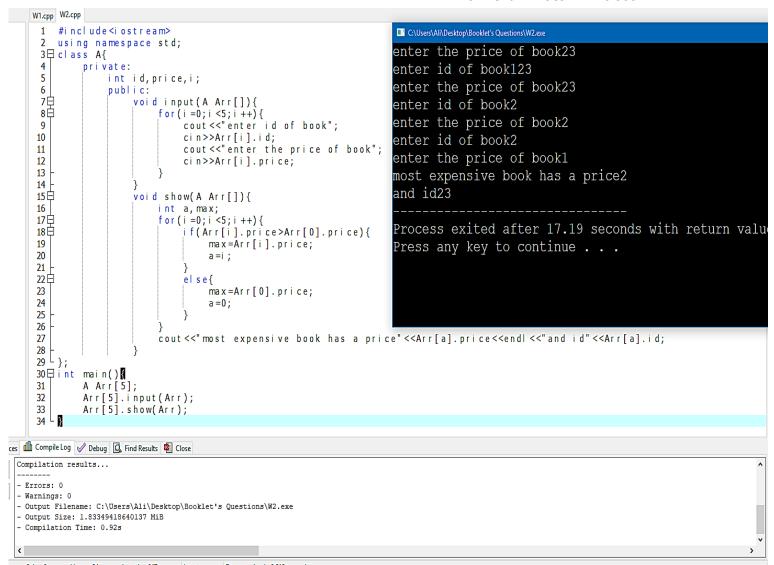
Output:

2-Program:

```cpp
#include<iostream>
using namespace std;
class A{
    private:
        int id,price,i;
        public:
            void input(A Arr[]){
                for(i=0;i<5;i++){
                    cout<<"enter id of book";
                    cin>>Arr[i].id;
                    cout<<"enter the price of book";
                    cin>>Arr[i].price;
                }
            }
            void show(A Arr[]){
                int a,max;
                for(i=0;i<5;i++){
                    if(Arr[i].price>Arr[0].price){
                        max=Arr[i].price;
                        a=i;
                    }
                    else{
                        max=Arr[0].price;
                        a=0;
                    }
                }
                cout<<"most expensive book has a price"<<Arr[a].price<<endl<<"and id"<<Arr[a].id;
            }
};
int main(){
    A Arr[5];
    Arr[5].input(Arr);
    Arr[5].show(Arr);
}
```

Output

W1.cpp W2.cpp

```cpp
1   #include<iostream>
2   using namespace std;
3   class A{
4       private:
5           int id,price,i;
6       public:
7           void input(A Arr[]){
8               for(i=0;i<5;i++){
9                   cout<<"enter id of book";
10                  cin>>Arr[i].id;
11                  cout<<"enter the price of book";
12                  cin>>Arr[i].price;
13              }
14          }
15          void show(A Arr[]){
16              int a,max;
17              for(i=0;i<5;i++){
18                  if(Arr[i].price>Arr[0].price){
19                      max=Arr[i].price;
20                      a=i;
21                  }
22                  else{
23                      max=Arr[0].price;
24                      a=0;
25                  }
26              }
27              cout<<"most expensive book has a price"<<Arr[a].price<<endl<<"and id"<<Arr[a].id;
28          }
29  };
30  int main(){
31      A Arr[5];
32      Arr[5].input(Arr);
33      Arr[5].show(Arr);
34  }
```

C:\Users\Ali\Desktop\Booklet's Questions\W2.exe

```
enter the price of book23
enter id of book123
enter the price of book23
enter id of book2
enter the price of book2
enter id of book2
enter the price of book1
most expensive book has a price2
and id23
--------------------------------
Process exited after 17.19 seconds with return valu
Press any key to continue . . .
```

ces   Compile Log Debug Find Results Close

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\Desktop\Booklet's Questions\W2.exe
- Output Size: 1.83349418640137 MiB
- Compilation Time: 0.92s
```

Week 2

1-Program:

```cpp
#include<iostream>
using namespace std;
class A{
    private:
        int m=0;
        protected:
            int n=0;
            public:
            int p=0;
            void B()
            {
                m++;
                n++;
                p++;
            }
```

```
};
class oop:public A{
        public:
                void show(){
                cout<<n;
                cout<<p;
        }
};
int main(){
        oop o1;
        o1.show();
        o1.B();
        o1.show();
}
```

Output:

```
1  #include<iostream>
2  using namespace std;
3  class A{
4      private:
5          int m=0;
6      protected:
7          int n=0;
8      public:
9          int p=0;
10         void B()
11         {
12             m++;
13             n++;
14             p++;
15         }
16  };
17  class oop:public A{
18      public:
19          void show(){
20          cout<<n;
21          cout<<p;
22      }
23  };
24  int main(){
25      oop o1;
26      o1.show();
27      o1.B();
28      o1.show();
29  }
30
```

C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(1).exe

```
0011
---------------------------------
Process exited after 0.03879 seconds with return value 0
Press any key to continue . . .
```

	Message
li\Desktop\Booklet's Questions\Weak 2(1).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
li\Desktop\Booklet's Questions\Weak 2(1).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
li\Desktop\Booklet's Questions\Weak 2(1).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11

2-Program:

```cpp
#include<iostream>
using namespace std;
class A{
    private:
        int m=0;
        protected:
            int n=0;
            public:
            int p=0;
            void B()
            {
                m++;
                n++;
                p++;
            }
};
class oop:private A{
    public:
        void show(){
        cout<<n;
        cout<<p;
    }
};
int main(){
    A o1;
    oop o2;
    o2.show();
    o1.B();
    o2.show();
}
```

Output:

```
W1.cpp  W2.cpp  Weak 2(1).cpp  Weak 2(2).cpp
   1    #include<iostream>
   2    using namespace std;
   3    class A{
   4        private:
   5            int m=0;
   6            protected:
   7                int n=0;
   8                public:
   9                int p=0;
  10                void B()
  11                {
  12                        m++;
  13                        n++;
  14                        p++;
  15                }
  16    };
  17    class oop:private A{
  18        public:
  19            void show(){
  20            cout<<n;
  21            cout<<p;
  22        }
  23    };
  24    int main(){
  25        A o1;
  26        oop o2;
  27        o2.show();
  28        o1.B();
  29        o2.show();
  30    }
  31
```

```
Select C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(2).exe

0000
--------------------------------
Process exited after 0.03761 seconds with return value 0
Press any key to continue . . .
```

sources Compile Log Debug Find Results Close

	Message
Ali\Desktop\Booklet's Questions\Weak 2(2).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
Ali\Desktop\Booklet's Questions\Weak 2(2).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
Ali\Desktop\Booklet's Questions\Weak 2(2).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11

3-Program:

```cpp
#include<iostream>
using namespace std;
class A{
	public:
		void show(){
			cout<<"i love"<<"\t";
		}
};
class B:public A{
	public:
		void display(){
			cout<<"pakistan";
		}
};
int main(){
	B o1;
	o1.show();
	o1.display();
```

}

Output:

W1.cpp | W2.cpp | Weak 2(1).cpp | Weak 2(2).cpp | Weak 2(3).cpp

```
1  #include<iostream>
2  using namespace std;
3  class A{
4      public:
5          void show(){
6              cout<<"i love"<<"\t";
7          }
8  };
9  class B:public A{
10     public:
11         void display(){
12             cout<<"pakistan";
13         }
14 };
15 int main(){
16     B o1;
17     o1.show();
18     o1.display();
19 }
20
```

Select C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(3).exe

```
i love  pakistan
--------------------------------
Process exited after 0.03951 seconds with return value 0
Press any key to continue . . .
```

ces | Compile Log | Debug | Find Results | Close

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(3).exe
- Output Size: 1.83281230926514 MiB
- Compilation Time: 1.16s
```

4-Program:

```cpp
#include<iostream>
using namespace std;
class A{
    public:
        void show(){
            cout<<"i"<<"\t";
        }
};
class B:public A{
    public:
        void display(){
            cout<<"pakistan";
        }
};
class C:public B{
    public:
        void pro(){
            cout<<"love"<<"\t";
        }
};
int main(){
    C o1;
    o1.show();
    o1.pro();
```

o1.display();
}Output:

```
W1.cpp  W2.cpp  Weak 2(1).cpp  Weak 2(2).cpp  Weak 2(3).cpp  Weak 2(4).cpp

 1   #include<iostream>
 2   using namespace std;
 3   class A{
 4        public:
 5            void show(){
 6                cout <<"i " <<"\t";
 7            }
 8   };
 9   class B:public A{
10        public:
11            void display(){
12                cout <<"pakistan";
13            }
14   };
15   class C:public B{
16        public:
17            void pro(){
18                cout <<"love" <<"\t";
19            }
20   };
21   int main(){
22       C o1;
23       o1.show();
24       o1.pro();
25       o1.display();
26   }
```

Console output:
```
Select C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(4).exe          —   □   ×

i        love      pakistan
---------------------------------
Process exited after 0.03864 seconds with return value 0
Press any key to continue . . .
```

```
Compile Log   Debug   Find Results   Close

Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(4).exe
- Output Size: 1.83299732208252 MiB
- Compilation Time: 1.09s
```

5-Program:

```cpp
#include<iostream>
using namespace std;
class A{
    public:
        void show(){
            cout<<"is  great"<<"\t";}
};
class B:public A{
    public:
        void display(){
            cout<<"pakistan ";//"\t";}
};
class C:public A{
    public:
        void pro(){
            cout<<"love ";//<<"\t";}
};
int main(){
    C o1;
    B o2;
    o1.pro();
    o1.show();
    o2.display();
```

```
        o2.show();
}
```

Output:

```
W1.cpp  W2.cpp  Weak 2(1).cpp  Weak 2(2).cpp  Weak 2(3).cpp  Weak 2(4).cpp  Weak 2(5).cpp
 1  #include<iostream>
 2  using namespace std;
 3  class A{
 4      public:
 5          void show(){
 6              cout <<"is  great"<<"\t";
 7          }
 8  };
 9  class B:public A{
10      public:
11          void display(){
12              cout <<"pakistan ";//"\t";
13          }
14  };
15  class C:public A{
16      public:
17          void pro(){
18              cout <<"love ";// <<"\t";
19          }
20  };
21  int main(){
22      C o1;
23      B o2;
24      o1.pro();
25      o1.show();
26      o2.display();
27      o2.show(); }
```

```
C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(5).exe
love is  great  pakistan is  great
--------------------------------
Process exited after 0.03892 seconds with return value 0
Press any key to continue . . .
```

```
Compile Log   Debug   Find Results   Close
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(5).exe
- Output Size: 1.83299732208252 MiB
- Compilation Time: 1.17s
```

6-Program:

```cpp
#include<iostream>
using namespace std;
class A{
    public:
        void show(){
            cout<<"i"<<"\t";          }};
class B:virtual public A{
    public:
        void display(){
            cout<<"Programming"<<"\t";        }};
class C:virtual public A{
    public:
        void pro(){
            cout<<"love"<<"\t";}};
class D:public C,public B{
    public:
    void meh(){
        cout<<"A"<<"\t";}};
int main(){
```

D o1;

o1.meh();

o1.show();

o1.pro();

o1.display();

Output:

W1.cpp | W2.cpp | Weak 2(1).cpp | Weak 2(2).cpp | Weak 2(3).cpp | Weak 2(4).cpp | Weak 2(5).cpp | Weak 2(6).cpp

```
1   #include<iostream>
2   using namespace std;
3   class A{
4       public:
5           void show(){
6               cout<<"i"<<"\t";
7           }
8   };
9   class B:virtual public A{
10      public:
11          void display(){
12              cout<<"Programming"<<"\t";
13          }
14  };
15  class C:virtual public A{
16      public:
17          void pro(){
18              cout<<"love"<<"\t";
19          }
20  };
21  class D:public C,public B{
22      public:
23          void meh(){
24              cout<<"A"<<"\t";
25          }
26  };
27  int main(){
28      D o1;
29      o1.meh();
30      o1.show();
31      o1.pro();
32      o1.display();}
```

Select C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(6).exe

```
A       i       love    Programming
----------------------------------
Process exited after 0.03881 seconds with return value 0
Press any key to continue . . .
```

ces | Compile Log | Debug | Find Results | Close

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\Desktop\Booklet's Questions\Weak 2(6).exe
- Output Size: 1.83518695831299 MiB
- Compilation Time: 0.94s
```

Week 3

1-Program:

```
#include<iostream>
using namespace std;
class A{
    protected:
        int a;
    public:
        A(){
            a=10;           }};
class B:public A{
    private:
        int b;
    public:
        B():A(){
            b=20;           }
```

```
            void show(){
                    cout<<"a="<<a<<endl;
                    cout<<"b="<<b<<endl;                    }};
int main(){
        B o1;
        o1.show();           }
```

Output:

2-Program:

```cpp
#include<iostream>
using namespace std;
class A{
        protected:
                int a;
                public:
                        A(){
                                a=10; }
                        A(int x){
                                a=x;   }};
class B:public A{
        private:
                char b;
                public:
                        B():A(){
                                b='t'; }
                        B(char y,int m):A(m){
                                b=y;}
                        void show(){
                                cout<<"a="<<a<<endl;
                                cout<<"b="<<b<<endl;}};
```

```
int main(){
      B o1('u',10);
      o1.show();          }
```

Output:

```
1   #include<iostream>
2   using namespace std;
3   class A{
4        protected:
5             int a;
6        public:
7             A(){
8                  a=10;    }
9             A(int x){
10                 a=x;     }};
11  class B:public A{
12       private:
13            char b;
14       public:
15            B():A(){
16                 b='t';   }
17            B(char y,int m):A(m){
18                 b=y; }
19            void show(){
20                 cout<<" a="<<a<<endl;
21                 cout<<" b="<<b<<endl;}};
22  int main(){
23       B o1('u',10);
24       o1.show();       }
```

```
C:\Users\Ali\Desktop\Booklet's Questions\Weak 3(2).exe
a=10
b=u

--------------------------------
Process exited after 0.03961 seconds with return value 0
Press any key to continue . . .
```

rces   Compile Log   Debug   Find Results   Close

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\Desktop\Booklet's Questions\Weak 3(2).exe
- Output Size: 1.83266830444336 MiB
- Compilation Time: 0.94s
```

3-Program:

```
#include<iostream>
using namespace std;
class Parent{
      private:
            int n=10;
            public:
                  void show(){
                        cout<<"n="<<n<<endl;      }};
class child:public Parent{
      private:
            int b=15;
            public:
                  void show(){
                        Parent::show();
                        cout<<"b="<<b;        }};
int main(){
      child o1;
```

o1.show(); }

Output:

```
1  #include<iostream>
2  using namespace std;
3  class Parent{
4      private:
5          int n=10;
6          public:
7              void show(){
8                  cout <<"n=" <<n<<endl;}};
9  class child:public Parent{
10     private:
11         int b=15;
12         public:
13             void show(){
14                 Parent::show();
15                 cout <<"b=" <<b;}};
16 int main(){
17     child o1;
18     o1.show();   }
19
```

```
C:\Users\Ali\Desktop\Booklet's Questions\Weak 3(3).exe

n=10
b=15
--------------------------------
Process exited after 0.03493 seconds with re
Press any key to continue . . .
```

sources Compile Log Debug Find Results Close

	Message
Ali\Desktop\Booklet's Questions\Weak 3(3).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
Ali\Desktop\Booklet's Questions\Weak 3(3).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11

Sel: 0   Lines: 19   Length: 304   Insert   Done parsing in 0 seconds

4-Program:

```
#include<iostream>
using namespace std;
class Parent{
     private:
          int n=10;
          public:
               void show(){
                    cout<<"n="<<n<<endl;        }};
class child:public Parent{
     private:
          int b=15;
          public:
               void show(){
```

```
                    Parent::show();
                    cout<<"b="<<b<<endl;        }};
class child1:public child{
        private:
                int c=20;
                public:
                        void show(){
                                child::show();
                                cout<<"c="<<c;  }};
int main(){
        child1 o1;
        o1.show();  }
```

Output:

```
1  #include<iostream>
2  using namespace std;
3  class Parent{
4       private:
5           int n=10;
6           public:
7               void show(){
8                   cout<<"n="<<n<<endl;}};
9  class child:public Parent{
10      private:
11          int b=15;
12          public:
13              void show(){
14                  Parent::show();
15                  cout<<"b="<<b<<endl;}};
16 class child1:public child{
17      private:
18          int c=20;
19          public:
20              void show(){
21                  child::show();
22                  cout<<"c="<<c;   }};
23 int main(){
24      child1 o1;
25      o1.show();   }
```

```
C:\Users\Ali\Desktop\Booklet's Questions\Weak 3(4).exe
b=15
c=20
------------------------------------
Process exited after 0.03503 seconds with return
Press any key to continue . . .
```

Weak 3(4).cpp

Resources | Compile Log | Debug | Find Results | Close

	Message
Ali\Desktop\Booklet's Questions\Weak 3(4).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
Ali\Desktop\Booklet's Questions\Weak 3(4).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11
Ali\Desktop\Booklet's Questions\Weak 3(4).cpp	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11

5-Program:

```
#include<iostream>
using namespace std;
class A{
        public:
                virtual void disp()=0;};
class B:public A{
                int b;
                public:
                        B(int x){
```

b=x;}
void disp()
{cout<<"Class B and b"<<b;}};
class C:public A{
      int c;
      public:
        C (int x){
         c=x;}
        void disp(){cout<<"Class C and c="<<c;}};
int main(){
  A *p;
  B o1(10);
  C o2(20);
  p=&o1;
  p->disp();
  p=&o2;
  p->disp();   }

Output:

6-Program:

```
#include<iostream>
using namespace std;
class A{
	private:
```

```cpp
        int a;
        public:
            A(int z){a=z;}
            void show(){
                cout<<a<<endl;}};
class B:public A{
    private:
        int b;
        public:
            B(int x , int m):A(m){b=x;}
            void show(){
                A::show();cout<<b<<endl;}};
class C:public B{
    private:
        int c;
        public:
            C(int y,int f , int h):B(f,h){c=y;}
            void show(){B::show();cout<<c;}};
int main(){
    C ob(12,23,34);
    ob.show();}
```

Output:

7-Program:

```cpp
#include<iostream>
using namespace std;
class Base{
protected:
int a;
public:
Base(){a=10;}};
class Derived:public Base{
int b;
public:
Derived(){b=20;}
void show(){
cout<<a<<endl<<b<<endl;}};
int main(){Derived a1;a1.show();system("pause>0");}
```

Output:

Weak 3(4).cpp | Weak 3(5).cpp | [*] Untitled2 | Weak 3(6).cpp | constructor in inheritance (default.cpp)

```cpp
1 #include<iostream>
2 using namespace std;
3 class Base{
4 protected:
5 int a;
6 public:
7 Base(){a=10;}};
8 class Derived:public Base{
9 int b;
10 public:
11 Derived(){b=20;}
12 void show(){
13 cout<<a<<endl<<b<<endl;}};
14 int main(){Derived a1;a1.show();system("pause>0");}
```

C:\Users\Ali\AppData\Local\Temp\Rar$DIa5468.12385\constructor in inheritance (default.exe

```
10
20

--------------------------------
Process exited after 43.39 seconds with retu
Press any key to continue . . .
```

ces | Compile Log | Debug | Find Results | Close

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Ali\AppData\Local\Temp\Rar$DIa5468.12385\constructor in  inheritance (default.exe
- Output Size: 1.83292770385742 MiB
- Compilation Time: 0.95s
```