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Object Oriented Programming

Code 1

```cpp
// book code (1)
//20-05-2024
//Yumna Irfan
//2023-bs-ai-021

#include<iostream>
using namespace std;

class publication //parent class
{
    private:
        float price;
        string title;

        public:
        void getData()
        {
            cout<<"Enter the price: "<<endl;
            cin>>price;
            cout<<"Enter the title: "<<endl;
            cin>>title;
        }
        void putData()
        {
            cout<<"\nprice: "<<title;
            cout<<"\ntitle: "<<price;
        }
};
class book : private publication //child class 1
{
    private:
        int pages;

        public:
            void getData()
            {
                publication :: getData();
                cout<<"Enter number of pages: "<<endl;
                cin>>pages;
            }
            void putData() const
            {
                cout<<"\npages: "<<pages;
            }
```

```
44          }
45  };
46  class tape : private publication //child class 2
47  {
48      private:
49          float time;
50
51          public:
52          void getData()
53          {
54              publication :: getData();
55              cout<<"Enter playing time in mins: "<<endl;
56              cin>>time;
57          }
58          void putData()
59          {
60              publication :: putData();
61              cout<<"\nplaying time in mins: "<<time;
62          }
63  };
64  int main()
65  {
66      book b;
67      tape t;
68      b.getData();
69      t.getData();
70      b.putData();
71      t.putData();
72      cout<<"\n";
73      return 0;
74  }
```

Output

```
C:\Users\HP\OneDrive\Desktop\oop assignment code 1.exe
Enter the price:
2000
Enter the title:
spirit
Enter number of pages:
1800
Enter the price:
1580
Enter the title:
marvels
Enter playing time in mins:
30.5

pages: 1800
price: marvels
title: 1580
playing time in mins: 30.5

--------------------------------
Process exited after 37.02 seconds with return value 0
Press any key to continue . . .
```

Code 2

```cpp
// book code (2)
//20-05-2024
//Yumna Irfan
//2023-bs-ai-021

#include<iostream>
using namespace std;

class publication // Parent class
{
    private:
        float price;
        string title;

    public:
        void getData()
        {
            cout << "Enter the price: " << endl;
            cin >> price;
            cout << "Enter the title: " << endl;
            cin >> title;
        }
        void putData()
        {
            cout << "\nTitle: " << title;
            cout << "\nPrice: " << price;
        }
};

class sales // Mixin class
{
    private:
        enum {months = 3};
        float salesArr[months];

    public:
        void getData()
        {
            cout << "Enter sales of three months: " << endl;
            for(int i = 0; i < months; i++)
            {
                cout << "\nMonth " << i + 1 << ": ";
                cin >> salesArr[i];
            }
```

```
44          }
45      }
46      void putData() const
47      {
48          for(int i = 0; i < months; i++)
49          {
50              cout << "  Sales of month " << i + 1 << ": ";
51              cout << salesArr[i] << endl;
52          }
53      }
54  };
55
56  class book : private publication, private sales // Child class 1
57  {
58      private:
59          int pages;
60
61      public:
62          void getData()
63          {
64              publication::getData();
65              cout << "Enter number of pages: " << endl;
66              cin >> pages;
67              sales::getData();
68          }
69          void putData()
70          {
71              publication::putData();
72              cout << "\nPages: " << pages << endl;
73              sales::putData();
74          }
75  };
76
77  class tape : private publication, private sales // Child class 2
78  {
79      private:
80          float time;
81
82      public:
83          void getData()
84          {
85              publication::getData();
86              cout << "Enter playing time in mins: " << endl;
```

```
87              cin >> time;
88              sales::getData();
89          }
90          void putData()
91          {
92              publication::putData();
93              cout << "\nPlaying time in mins: " << time << endl;
94              sales::putData();
95          }
96  };
97
98  int main()
99  {
100     book b;
101     tape t;
102
103     cout << "Enter book details:" << endl;
104     b.getData();
105     cout << "Enter tape details:" << endl;
106     t.getData();
107
108     cout << "\nBook details:" << endl;
109     b.putData();
110
111     cout << "\nTape details:" << endl;
112     t.putData();
113
114     cout << "\n";
115     return 0;
116 }
```

Output


C:\Users\HP\OneDrive\Desktop\oop assignment code 2.exe
Enter book details:
Enter the price:
2000
Enter the title:
spirit
Enter number of pages:
1800
Enter sales of three months:
Month 1: 5000
Month 2: 3500
Month 3: 2780
Enter tape details:
Enter the price:
1800
Enter the title:
marvels
Enter playing time in mins:
30.5
Enter sales of three months:
Month 1: 1500
Month 2: 1000
Month 3: 750
Book details:
Title: spirit
Price: 2000
Pages: 1800
Sales of month 1: 5000
Sales of month 2: 3500
Sales of month 3: 2780
Tape details:
Title: marvels
Price: 1800
Playing time in mins: 30.5
Sales of month 1: 1500
Sales of month 2: 1000
Sales of month 3: 750
Process exited after 59.31 seconds with return value 0

Code 3

```cpp
// cd dvd code
//20-05-2024
//Yumna Irfan
//2023-bs-ai-021

#include<iostream>
using namespace std;

class publication //parent class
{
    private:
        float price;
        string title;

        public:
        void getData()
        {
            cout<<"Enter the price: "<<endl;
            cin>>price;
            cout<<"Enter the title: "<<endl;
            cin>>title;
        }
        void putData()
        {
            cout<<"\nprice: "<<title;
            cout<<"\ntitle: "<<price;
        }
};
class book : private publication //child class 1
{
    private:
        int pages;

        public:
            void getData()
            {
                publication :: getData();
                cout<<"Enter number of pages: "<<endl;
                cin>>pages;
            }
            void putData()
            {
                publication :: getData();
```

```
44                  cout<<"\npages: "<<pages;
45              }
46  };
47  class tape : private publication //child class 2
48  {
49      private:
50          float time;
51
52          public:
53          void getData()
54          {
55              publication :: getData();
56              cout<<"Enter playing time in mins: "<<endl;
57              cin>>time;
58          }
59          void putData()
60          {
61              publication :: putData();
62              cout<<"\nplaying time in mins: "<<time;
63          }
64  };
65  class disk : private publication  // child class 3
66  {
67      private:
68          enum diskType {DVD , CD} diskType;
69          public:
70              void getData()
71              {
72                  publication :: getData();
73                  char type;
74                  cout<<"Enter disk type (d for DVD , c for CD): ";
75                  cin>>type;
76                  if(type == 'd' || type == 'D')
77                  diskType = DVD;
78                  else if(type == 'c' || type == 'C')
79                  diskType = CD;
80              }
81              void putData()
82              {
83                  publication :: putData();
84                  cout<<"\ndisk type: "<<(diskType == DVD ? "DVD" : "CD");
85              }
86  };
```

```
87  int main()
88  {
89      book b;
90      tape t;
91      disk d;
92
93      cout << "Enter book details:" << endl;
94      b.getData();
95
96      cout << "Enter tape details:" << endl;
97      t.getData();
98
99      cout<<"enter disk details: "<<endl;
100     d.getData();
101
102     cout << "\nBook details:" << endl;
103     b.putData();
104
105     cout << "\nTape details:" << endl;
106     t.putData();
107
108     cout<<"\nDisk details:"<<endl;
109     d.putData();
110
111     cout << "\n";
112     return 0;
113 }
```

Output

```
C:\Users\HP\OneDrive\Desktop\oop assignment code 3.exe
Enter book details:
Enter the price:
2000
Enter the title:
spirit
Enter number of pages:
1800
Enter tape details:
Enter the price:
1500
Enter the title:
marvels
Enter playing time in mins:
30.5
enter disk details:
Enter the price:
3500
Enter the title:
songs
Enter disk type (d for DVD , c for CD): c

Book details:
Enter the price:
2000
Enter the title:
spirit

pages: 1800
Tape details:

price: marvels
title: 1500
playing time in mins: 30.5
Disk details:

price: songs
title: 3500
disk type: CD

--------------------------------
Process exited after 85.86 seconds with return value 0
Press any key to continue . . .
```

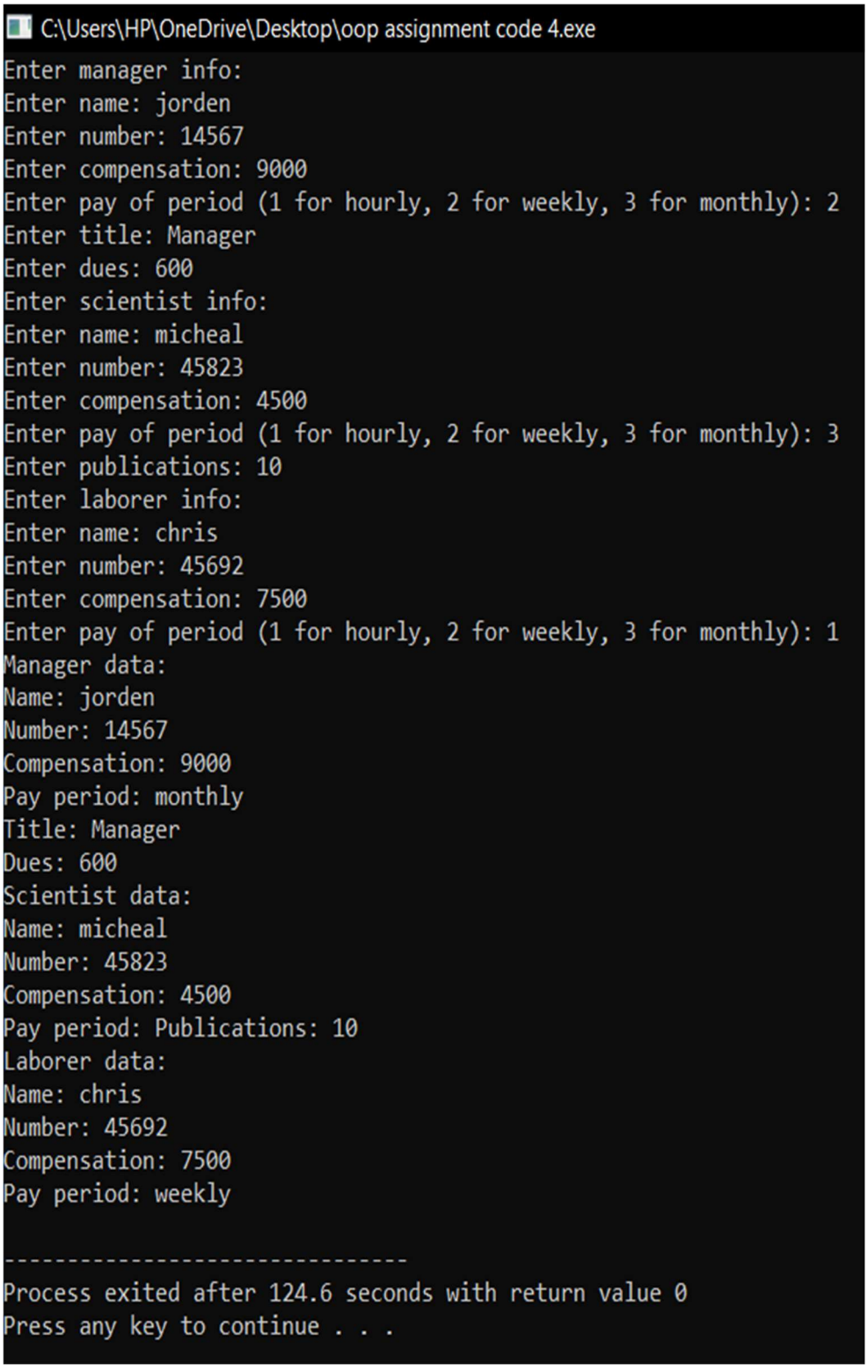
Code 4

```cpp
// employee code
//20-05-2024
//Yumna Irfan
//2023-bs-ai-021

#include <iostream>
#include <string>
using namespace std;

enum period { hourly, weekly, monthly };
class employee
{
protected:
    string name;
    unsigned long number;
public:
    void getData()
    {
        cout <<"Enter name: ";
        cin >>name;
        cout <<"Enter number: ";
        cin >>number;
    }
    void putData() const {
        cout <<"Name: " <<name <<endl;
        cout <<"Number: " <<number <<endl;
    }
};
class employee2 : public employee {
private:
    double compensation;
    period p;
public:
    void getData() {
        employee::getData();
        cout <<"Enter compensation: ";
        cin >>compensation;
        int pInput;
        cout <<"Enter pay of period (1 for hourly, 2 for weekly, 3 for monthly): ";
        cin >>pInput;
        p = static_cast<period>(pInput);
    }
    void putData() const {
```

```
44          employee::putData();
45          cout <<"Compensation: " <<compensation <<endl;
46          cout << "Pay period: ";
47          switch (p) {
48              case hourly: cout << "hourly\n"; break;
49              case weekly: cout << "weekly\n"; break;
50              case monthly: cout << "monthly\n"; break;
51          }
52      }
53  };
54  class manager2 : public employee2 {
55  private:
56      string title;
57      double dues;
58  public:
59      void getData() {
60          employee2::getData();
61          cout <<"Enter title: ";
62          cin >>title;
63          cout <<"Enter dues: ";
64          cin >>dues;
65      }
66      void putData() const {
67          employee2::putData();
68          cout <<"Title: " << title <<endl;
69          cout <<"Dues: " << dues <<endl;
70      }
71  };
72  class scientist2 : public employee2 {
73  private:
74      int publications;
75  public:
76      void getData() {
77          employee2::getData();
78          cout <<"Enter publications: ";
79          cin >>publications;
80      }
81      void putData() const {
82          employee2::putData();
83          cout <<"Publications: " <<publications <<endl;
84      }
85  };
86
```

```
87  class laborer2 : public employee2 {
88  };
89  int main() {
90      manager2 m;
91      scientist2 s;
92      laborer2 l;
93      cout <<"Enter manager info: "<<endl;
94      m.getData();
95      cout <<"Enter scientist info: "<<endl;
96      s.getData();
97      cout <<"Enter laborer info: "<<endl;
98      l.getData();
99      cout <<"Manager data: "<<endl;;
100     m.putData();
101     cout <<"Scientist data:"<<endl;
102     s.putData();
103     cout <<"Laborer data:"<<endl;
104     l.putData();
105     return 0;
106 }
```

Output


C:\Users\HP\OneDrive\Desktop\oop assignment code 4.exe
Enter manager info:
Enter name: jorden
Enter number: 14567
Enter compensation: 9000
Enter pay of period (1 for hourly, 2 for weekly, 3 for monthly): 2
Enter title: Manager
Enter dues: 600
Enter scientist info:
Enter name: micheal
Enter number: 45823
Enter compensation: 4500
Enter pay of period (1 for hourly, 2 for weekly, 3 for monthly): 3
Enter publications: 10
Enter laborer info:
Enter name: chris
Enter number: 45692
Enter compensation: 7500
Enter pay of period (1 for hourly, 2 for weekly, 3 for monthly): 1
Manager data:
Name: jorden
Number: 14567
Compensation: 9000
Pay period: monthly
Title: Manager
Dues: 600
Scientist data:
Name: micheal
Number: 45823
Compensation: 4500
Pay period: Publications: 10
Laborer data:
Name: chris
Number: 45692
Compensation: 7500
Pay period: weekly

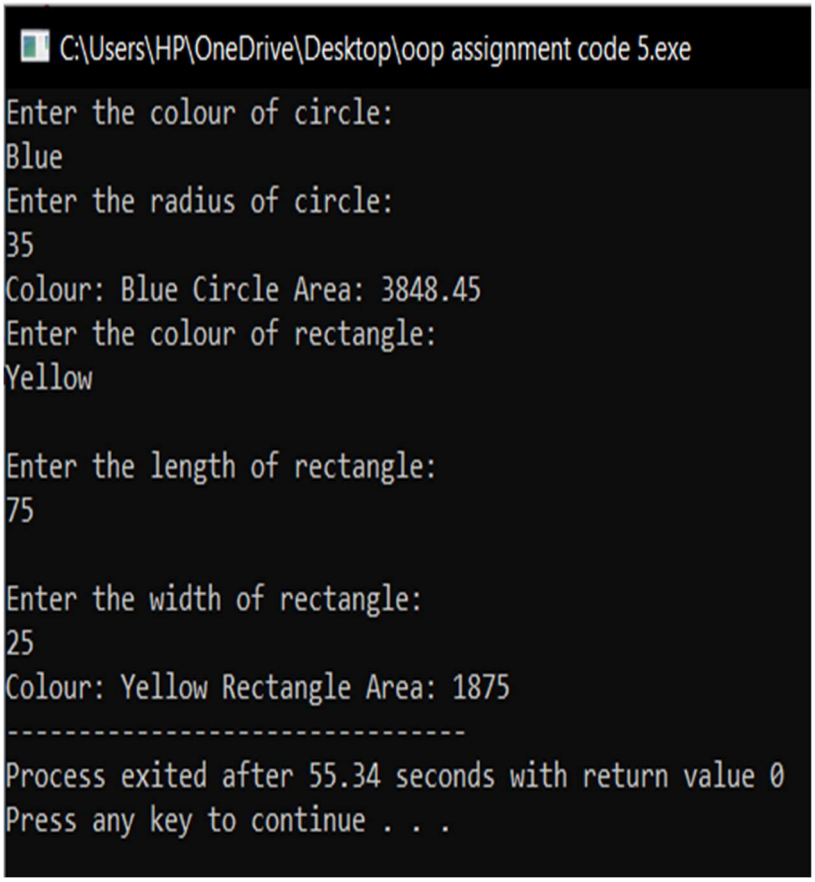
Process exited after 124.6 seconds with return value 0
Press any key to continue . . .

Code 5

```cpp
// circle rectangle code
//20-05-2024
//Yumna Irfan
//2023-bs-ai-021

#include <iostream>
#include <cmath>
using namespace std;
class shape {
protected:
    string colour;
public:
    shape(const string& colour) : colour(colour) {}
    void printColour() const
    {
        cout <<"Colour: "<<colour<< " ";
    }
};
class circle : public shape {
private:
    double radius;
public:
    circle(const string& colour, double radius) : shape(colour), radius(radius) {}
    double calculateArea() const
    {
        return M_PI * radius * radius;
    }
    void printArea() const
    {
        cout <<"Circle Area: " <<calculateArea()<<" ";
    }
};
class rectangle : public shape {
private:
    double length;
    double width;
public:
    rectangle(const string& colour, double length, double width) : shape(colour), length(length), width(width) {}
    double calculateArea() const
    {
        return length * width;
    }
    void printArea() const
```

```
    {
        cout << "Rectangle Area: " << calculateArea() <<" ";
    }
};
int main()
{
    string colour;
    double radius, length, width;
    cout <<"Enter the colour of circle: "<<endl;
    cin >>colour;
    cout <<"Enter the radius of circle: "<<endl;
    cin >>radius;
    circle c(colour, radius);
    c.printColour();
    c.printArea();
    cout <<"\nEnter the colour of rectangle:\n";
    cin >>colour;
    cout <<"\nEnter the length of rectangle:\n";
    cin >>length;
    cout <<"\nEnter the width of rectangle:\n";
    cin >>width;
    rectangle r(colour, length, width);
    r.printColour();
    r.printArea();
    return 0;
}
```

Output

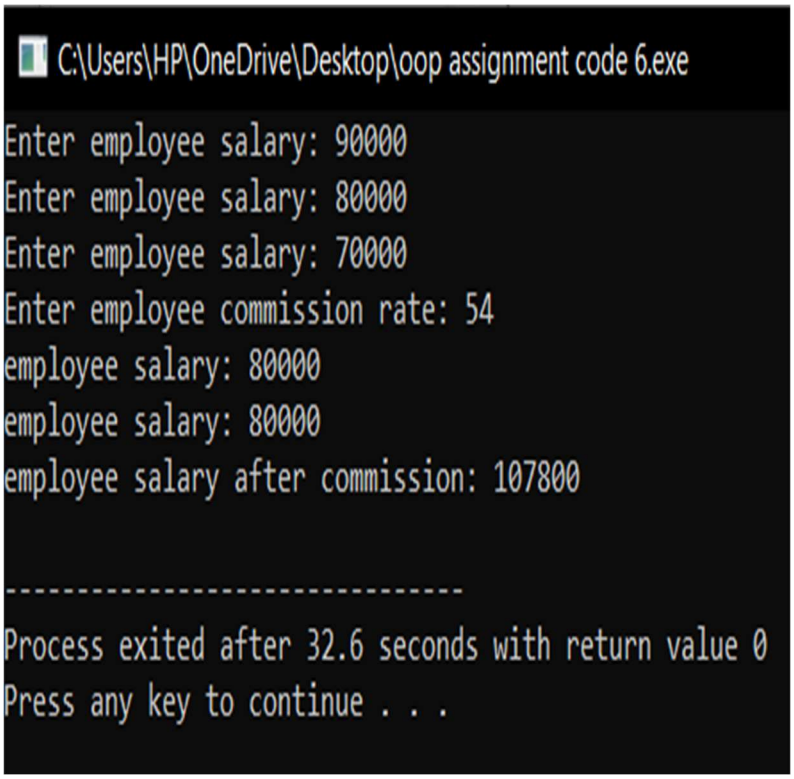

C:\Users\HP\OneDrive\Desktop\oop assignment code 5.exe
Enter the colour of circle:
Blue
Enter the radius of circle:
35
Colour: Blue Circle Area: 3848.45
Enter the colour of rectangle:
Yellow
Enter the length of rectangle:
75
Enter the width of rectangle:
25
Colour: Yellow Rectangle Area: 1875
Process exited after 55.34 seconds with return value 0
Press any key to continue . . .

Code 6

```cpp
//employee code (6)
//20-05-2024
//Yumna Irfan
//2023-bs-ai-021

#include<iostream>
using namespace std;

class employee
{
private:
    string name, department;
    int empID;
public:
    void getdata()
    {
        cout << "Enter employee name: ";
        cin >> name;
        cout << "Enter employee department: ";
        cin >> department;
        cout << "Enter employee ID: ";
        cin >> empID;
    }
    void putdata()
    {
        cout << "employee name: " << name << endl;
        cout << "employee department: " << department << endl;
        cout << "employee ID: " << empID << endl;
    }
};

class salariedemployee : public employee
{
private:
    int salary;
public:
    void getdata()
    {
        cout << "Enter employee salary: ";
        cin >> salary;
    }
    void putdata()
    {
```

```
44          cout << "employee salary: " << salary << endl;
45      }
46  };
47
48  class commissionedemployee : public employee
49  {
50  private:
51      int salary;
52      float commissionrate;
53  public:
54      void getdata()
55      {
56          cout << "Enter employee salary: ";
57          cin >> salary;
58          cout << "Enter employee commission rate: ";
59          cin >> commissionrate;
60      }
61      void putdata()
62      {
63          float commission = (salary * commissionrate) / 100;
64          float totalSalary = salary + commission;
65          cout << "employee salary after commission: " << totalSalary << endl;
66      }
67  };
68
69  int main()
70  {
71      salariedemployee s;
72      commissionedemployee c;
73      s.getdata();
74      s.getdata();
75      c.getdata();
76      s.putdata();
77      s.putdata();
78      c.putdata();
79      return 0;
80  }
```

Output


C:\Users\HP\OneDrive\Desktop\oop assignment code 6.exe
Enter employee salary: 90000
Enter employee salary: 80000
Enter employee salary: 70000
Enter employee commission rate: 54
employee salary: 80000
employee salary: 80000
employee salary after commission: 107800

Process exited after 32.6 seconds with return value 0
Press any key to continue . . .