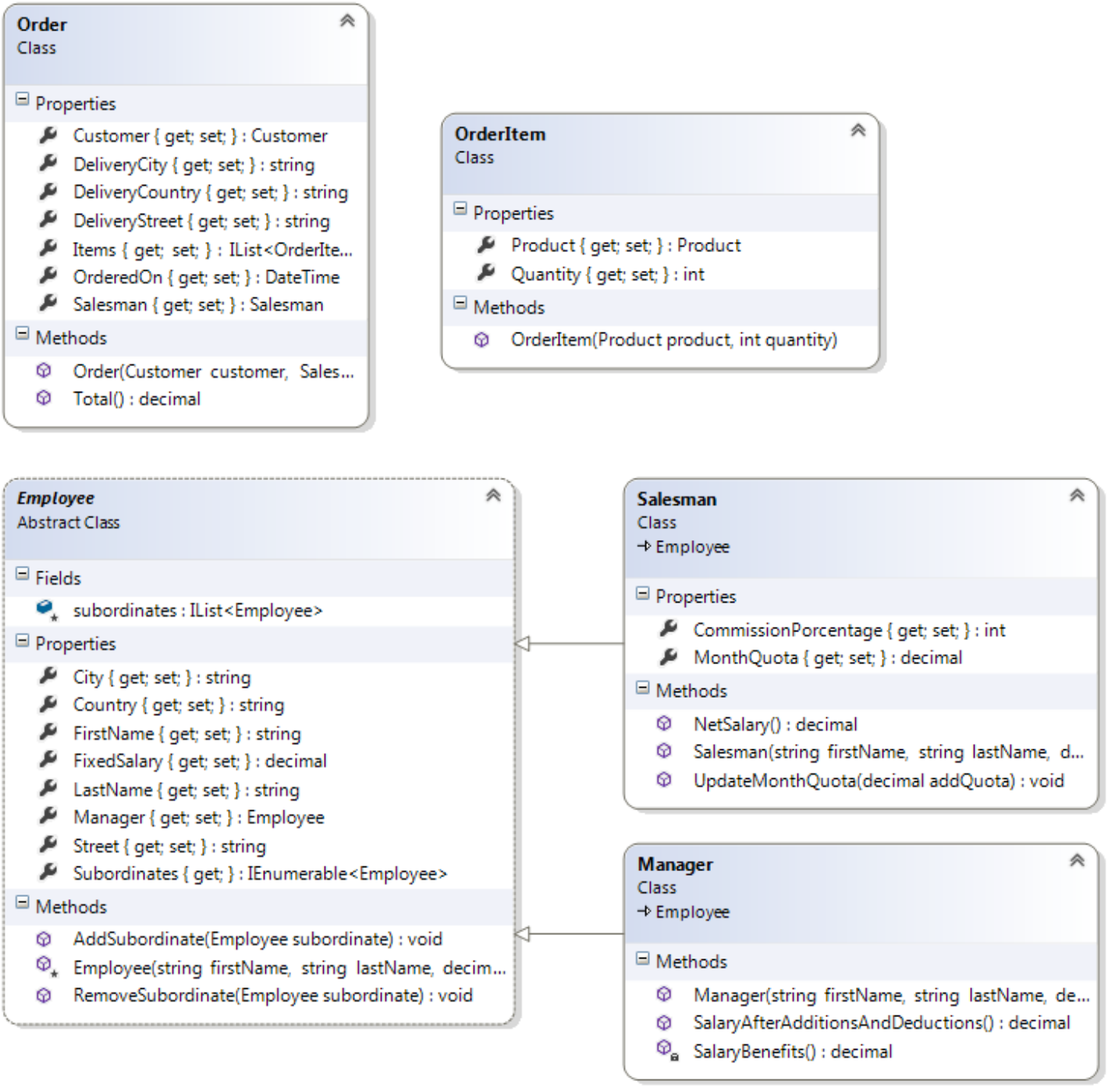
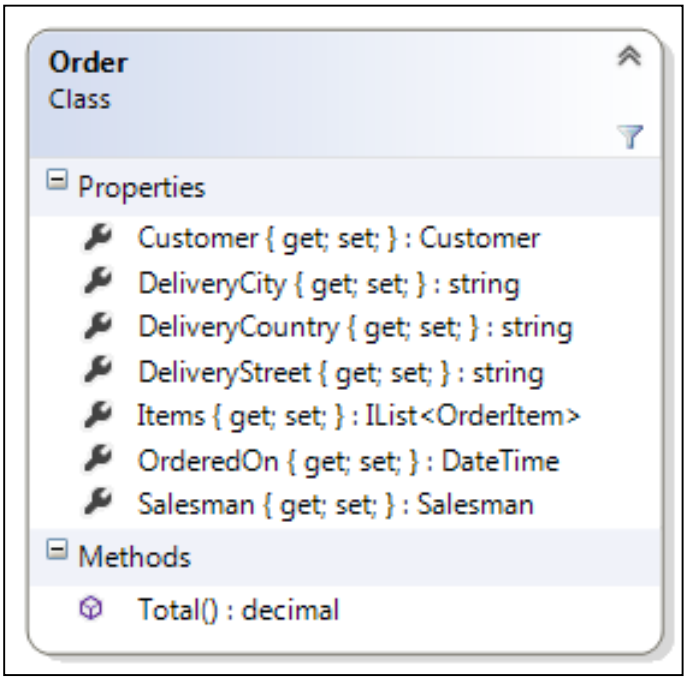
FIRST COURSE



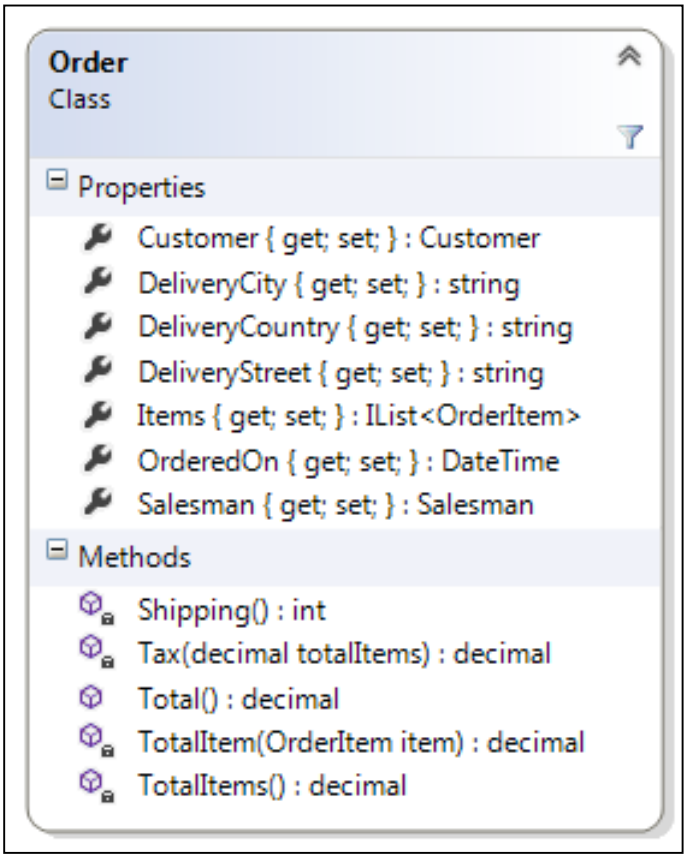
FIRST HOLE


Order
Class
Properties
Customer { get; set; } : Customer
DeliveryCity { get; set; } : string
DeliveryCountry { get; set; } : string
DeliveryStreet { get; set; } : string
Items { get; set; } : IList<OrderItem>
OrderedOn { get; set; } : DateTime
Salesman { get; set; } : Salesman
Methods
Total() : decimal

```
public class Order
{
      public decimal Total()
      {
          decimal totalItems = 0;
          foreach (var item in this.Items)
          {
              decimal totalItem = 0;
              decimal itemAmount = item.Product.UnitPrice * item.Quantity;
              if (item.Product.Category == ProductCategory.Accessories)
              {
                  decimal booksDiscount = 0;
                  if (itemAmount >= 100)
                  {
                      booksDiscount = itemAmount * 10 / 100;
                  }
                  totalItem = itemAmount - booksDiscount;
              }
              if (item.Product.Category == ProductCategory.Bikes)
              {
                  // 20% discount for Bikes
                  totalItem = itemAmount - itemAmount * 20 / 100;
              }
              if (item.Product.Category == ProductCategory.Cloathing)
              {
                  decimal cloathingDiscount = 0;
                  if (item.Quantity > 2)
                  {
                      cloathingDiscount = item.Product.UnitPrice;
                  }
                  totalItem = itemAmount - cloathingDiscount;
              }
              totalItems += totalItem;
          }

          if (this.DeliveryCountry == "USA")
          {
              //total=totalItems + tax + 0 shipping
              return totalItems + totalItems * 5 / 100;
          }

          //total=totalItems + tax + 15 shipping
          return totalItems + totalItems * 5 / 100 + 15;
      }
```

```
    }
```

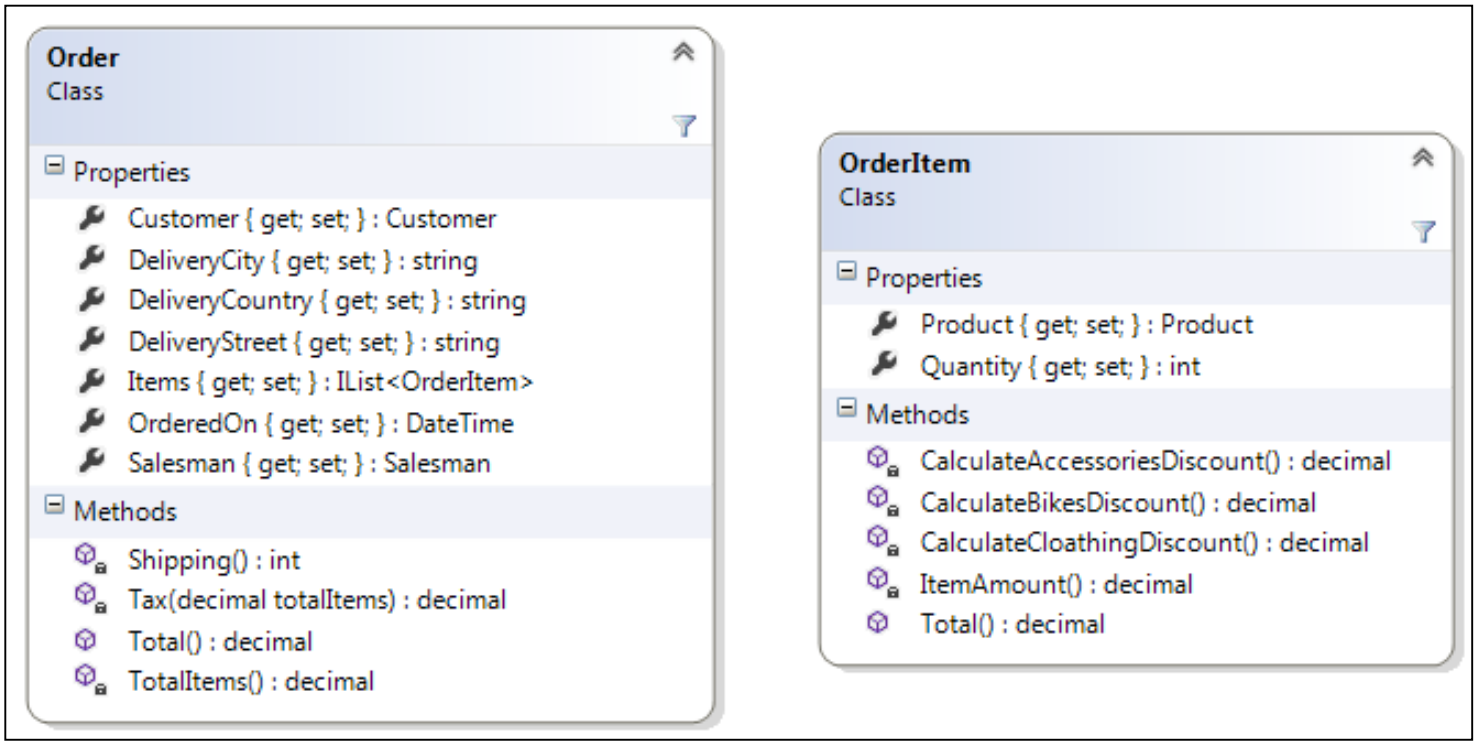
FIRST HOLE




```
public class Order
{
    public decimal Total()
    {
        var totalItems = this.TotalItems();
        var tax = this.Tax(totalItems);
        var shipping = this.Shipping();

        return totalItems + tax + shipping;
    }

    private int Shipping()
    {
        int shipping = 15;
        if (this.DeliveryCountry == "USA")
        {
            shipping = 0;
        }
        return shipping;
    }
```

```
    private decimal Tax(decimal totalItems)
    {
        return totalItems * 5 / 100;
    }

    private decimal TotalItems()
    {
        decimal totalItems = 0;
        foreach (var item in this.Items)
        {
            var itemAmount = TotalItem(item);
            totalItems += itemAmount;
        }
        return totalItems;
    }

    private decimal TotalItem(OrderItem item)
    {
        decimal totalItem = 0;
        decimal itemAmount = item.Product.UnitPrice*item.Quantity;
        if (item.Product.Category == ProductCategory.Accessories)
        {
            decimal booksDiscount = 0;
            if (itemAmount >= 100)
            {
                booksDiscount = itemAmount*10/100;
            }
            totalItem = itemAmount - booksDiscount;
        }
        if (item.Product.Category == ProductCategory.Bikes)
        {
            // 20% discount for Bikes
            totalItem = itemAmount - itemAmount * 20 / 100;
        }
        if (item.Product.Category == ProductCategory.Cloathing)
        {
            decimal cloathingDiscount = 0;
            if (item.Quantity > 2)
            {
                cloathingDiscount = item.Product.UnitPrice;
            }
            totalItem = itemAmount - cloathingDiscount;
        }
        return totalItem;
    }
}
```

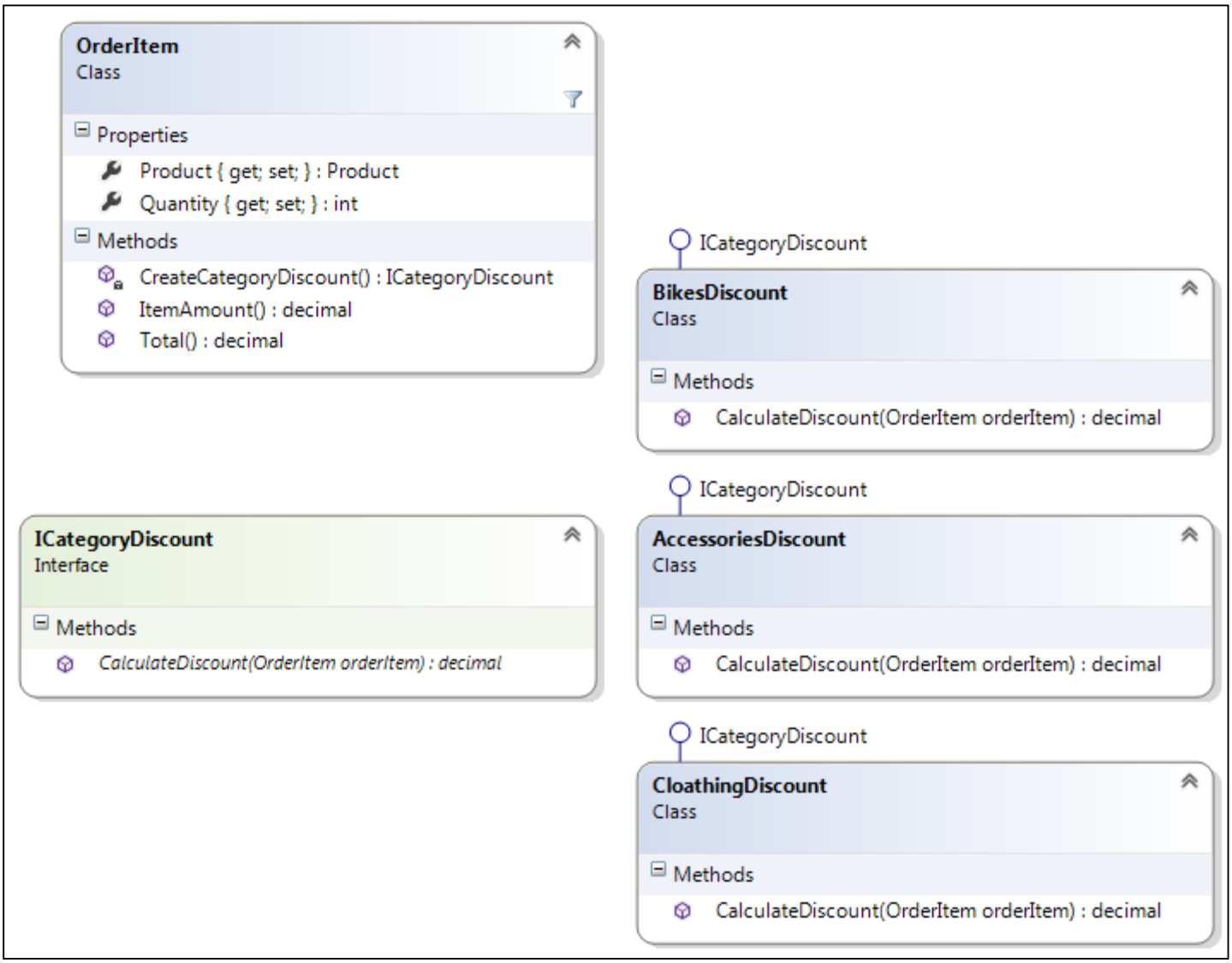
SECOND HOLE




```
public class Order
{
    private decimal TotalItems()
    {
        decimal totalItems = 0;
        foreach (var item in this.Items)
        {
            totalItems += item.Total();
        }
        return totalItems;
    }
}
```

```
public class OrderItem
{
    public decimal Total()
    {
        decimal discount = 0;
        if (Product.Category == ProductCategory.Accessories)
        {
            discount = this.CalculateAccessoriesDiscount();
        }
        if (Product.Category == ProductCategory.Bikes)
        {
            discount = this.CalculateBikesDiscount();
        }
        if (Product.Category == ProductCategory.Cloathing)
        {
            discount = this.CalculateCloathingDiscount();
        }
        return this.ItemAmount() - discount;
    }

    private decimal CalculateAccessoriesDiscount()
    {
        decimal discount = 0;
        if (this.ItemAmount() >= 100)
        {
            discount = this.ItemAmount() * 10 / 100;
        }
        return discount;
    }

    private decimal CalculateBikesDiscount()
    {
        return this.ItemAmount() * 20 / 100;
    }

    private decimal CalculateCloathingDiscount()
    {
        decimal discount = 0;
        if (this.Quantity > 2)
        {
            discount = this.Product.UnitPrice;
        }
        return discount;
    }

    private decimal ItemAmount()
    {
        return this.Product.UnitPrice * this.Quantity;
    }
}
```

THIRD HOLE

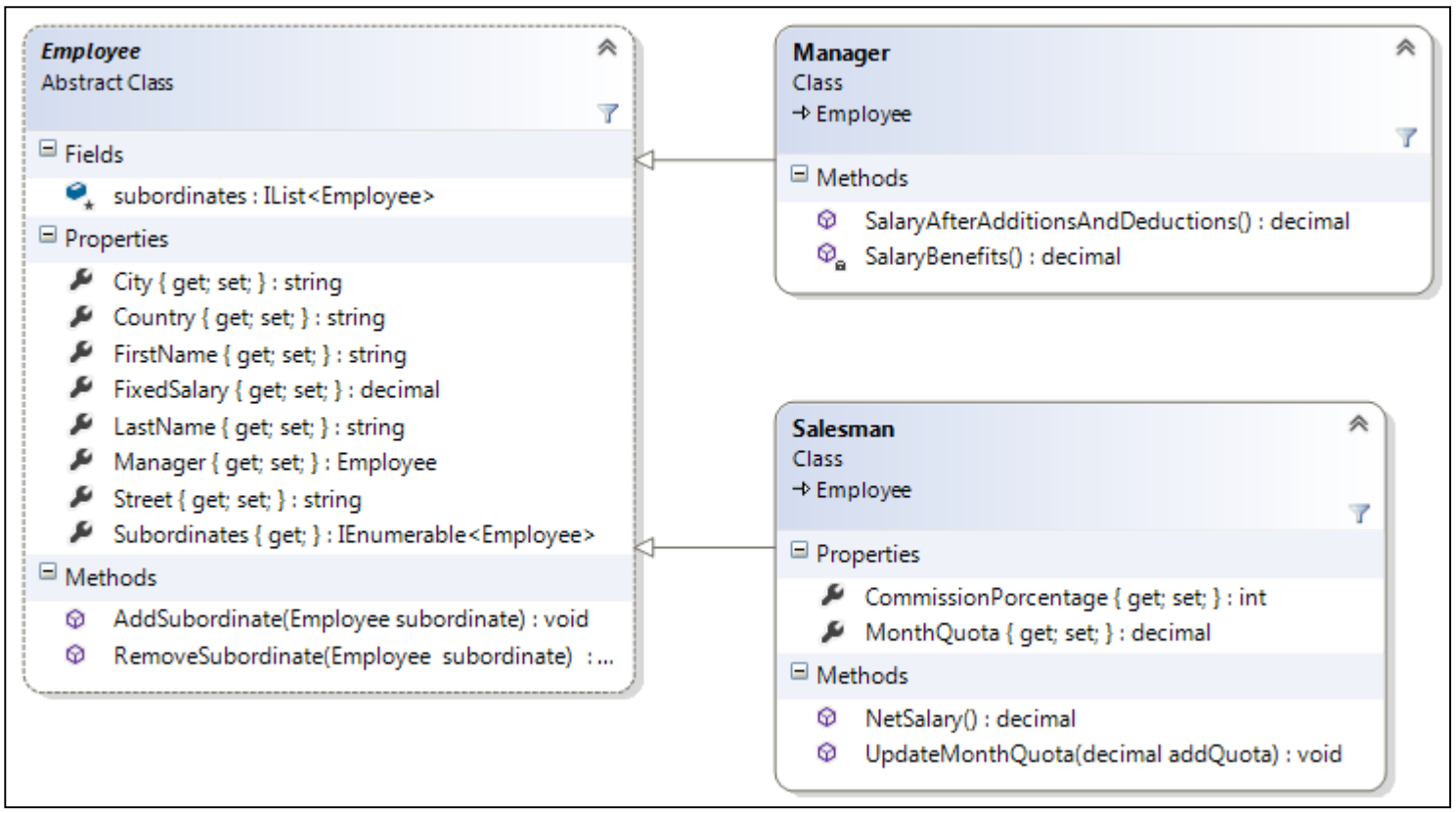



```
public class OrderItem
{
    public decimal Total()
    {
        return this.ItemAmount() - this.CreateCategoryDiscount()
                                                .CalculateDiscount(this);
    }

    private ICategoryDiscount CreateCategoryDiscount()
    {
        ICategoryDiscount categoryDiscount = null;
        if (this.Product.Category == ProductCategory.Accessories)
        {
            categoryDiscount = new AccessoriesDiscount();
        }
```

```
        if (this.Product.Category == ProductCategory.Bikes)
        {
            categoryDiscount = new BikesDiscount();
        }
        if (this.Product.Category == ProductCategory.Cloathing)
        {
            categoryDiscount = new CloathingDiscount();
        }
        return categoryDiscount;
    }
}

public interface ICategoryDiscount
{
    decimal CalculateDiscount(OrderItem orderItem);
}

public class AccessoriesDiscount : ICategoryDiscount
{
    public decimal CalculateDiscount(OrderItem orderItem)
    {
        decimal discount = 0;
        if (orderItem.ItemAmount() >= 100)
        {
            discount = orderItem.ItemAmount() * 10 / 100;
        }
        return discount;
    }
}

public class BikesDiscount : ICategoryDiscount
{
    public decimal CalculateDiscount(OrderItem orderItem)
    {
        return orderItem.ItemAmount() * 20 / 100;
    }
}

public class CloathingDiscount : ICategoryDiscount
{
    public decimal CalculateDiscount(OrderItem orderItem)
    {
        decimal discount = 0;
        if (orderItem.Quantity > 2)
        {
            discount = orderItem.Product.UnitPrice;
        }
        return discount;
    }
}
```

FOURTH HOLE

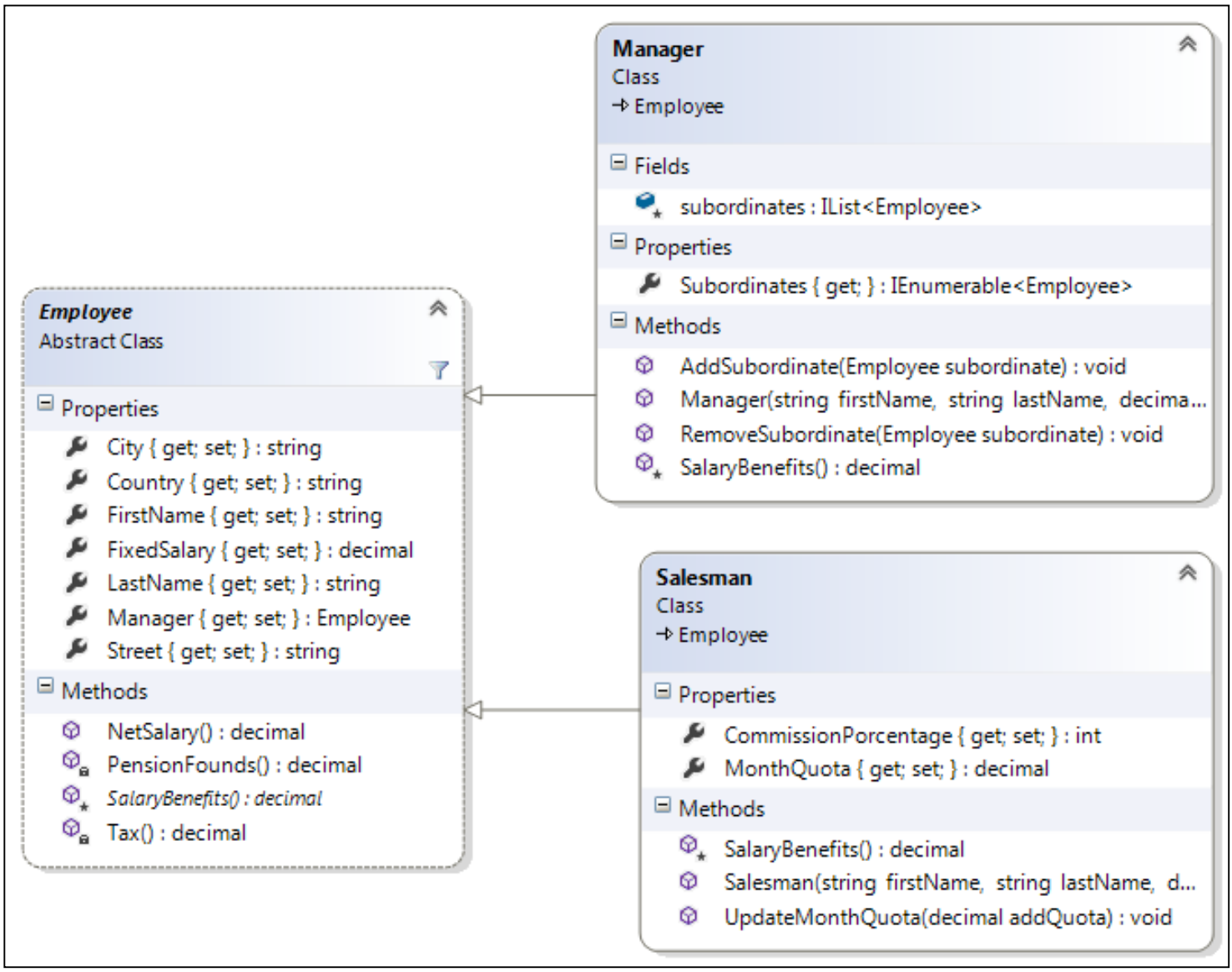
- **PREVIOUS HOLE**




```
public abstract class Employee
{
    protected IList<Employee> subordinates = new List<Employee>();

    public IEnumerable<Employee> Subordinates
    {
        get { return subordinates.ToArray(); }
    }

    protected Employee(string firstName, string lastName, decimal fixedSalary)
    {
        this.FirstName = firstName;
        this.LastName = lastName;
        this.FixedSalary = fixedSalary;
    }

    public void AddSubordinate(Employee subordinate)
    {
        subordinates.Add(subordinate);
        subordinate.Manager = this;
    }
```

```
    public void RemoveSubordinate(Employee subordinate)
    {
        subordinates.Remove(subordinate);
        subordinate.Manager = null;
    }
}


public class Salesman : Employee
{
    public decimal NetSalary()
    {
        decimal benefits = this.MonthQuota * this.CommissionPorcentage / 100;
        decimal pensionFounds = this.FixedSalary * 10 / 100;
        decimal tax = 0;
        if (FixedSalary > 3500)
            tax = FixedSalary * 5 / 100;
        return this.FixedSalary + benefits - pensionFounds - tax;
    }
}

public class Manager : Employee
{
    public decimal SalaryAfterAdditionsAndDeductions()
    {
        decimal benefits = SalaryBenefits();
        decimal pensionFounds = this.FixedSalary * 10 / 100;
        decimal tax = 0;
        if (FixedSalary > 3500)
            tax = FixedSalary * 5 / 100;
        return this.FixedSalary + benefits - pensionFounds - tax;
    }

    private decimal SalaryBenefits()
    {
        return this.subordinates.Count * 20;
    }
}
```

- **CURRENT HOLE**




```
public abstract class Employee
{
    public decimal NetSalary()
    {
        return this.FixedSalary + SalaryBenefits() - PensionFounds() - Tax();
    }

    private decimal Tax()
    {
        decimal tax = 0;
        if (this.FixedSalary > 3500)
            tax = this.FixedSalary*5/100;
        return tax;
    }
```

```
    private decimal PensionFounds()
    {
        return this.FixedSalary * 10 / 100;
    }

    protected abstract decimal SalaryBenefits();
}

public class Salesman : Employee
{
    protected override decimal SalaryBenefits()
    {
        return this.MonthQuota * this.CommissionPorcentage / 100;
    }
}

public class Manager : Employee
{
    protected IList<Employee> subordinates = new List<Employee>();

    protected override decimal SalaryBenefits()
    {
        return this.subordinates.Count * 20;
    }

    public IEnumerable<Employee> Subordinates
    {
        get { return subordinates.ToArray(); }
    }

    public void AddSubordinate(Employee subordinate)
    {
        subordinates.Add(subordinate);
        subordinate.Manager = this;
    }

    public void RemoveSubordinate(Employee subordinate)
    {
        subordinates.Remove(subordinate);
        subordinate.Manager = null;
    }
}
```