

Simulation Engineering

Homework 1 : Ice Cream Shop



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Objects

Objects

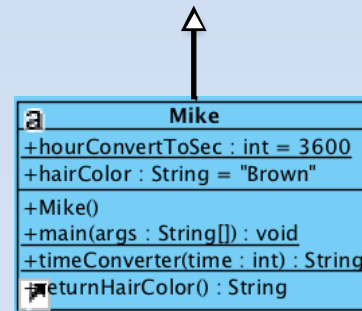


Objects

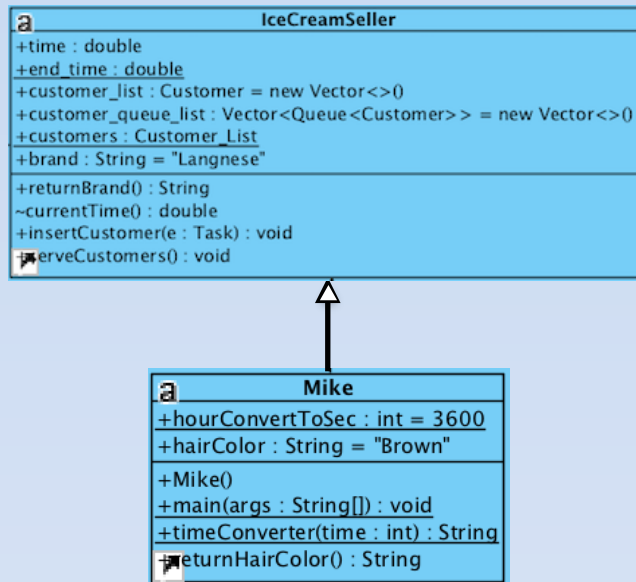
| Mike | |
|---|-------------------------------------|
|  | +hourConvertToSec : int = 3600 |
| | +hairColor : String = "Brown" |
| | +Mike() |
| | +main(args : String[]) : void |
| | +timeConverter(time : int) : String |
|  | +returnHairColor() : String |



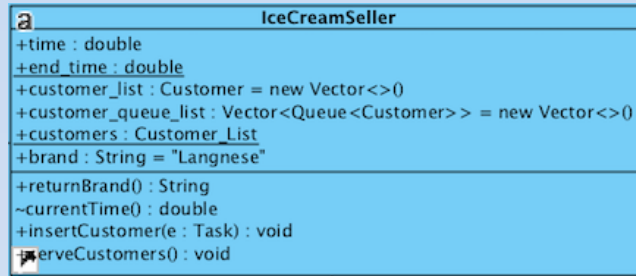
Objects



Objects



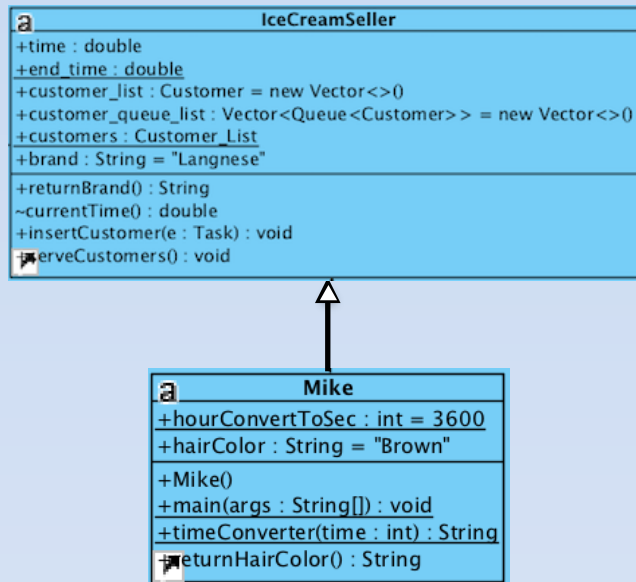
Objects



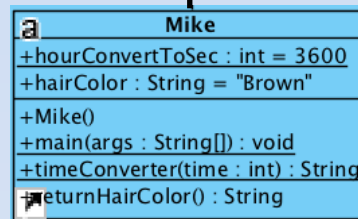
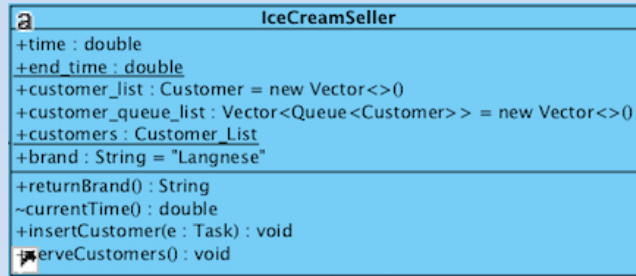
Mike inherits from IceCreamSeller



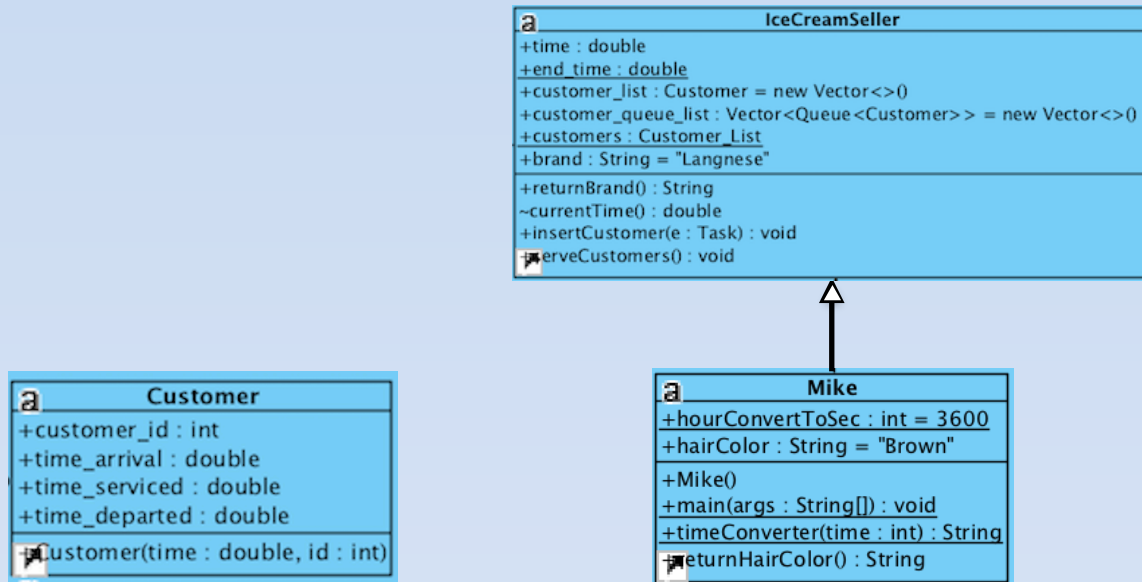
Objects



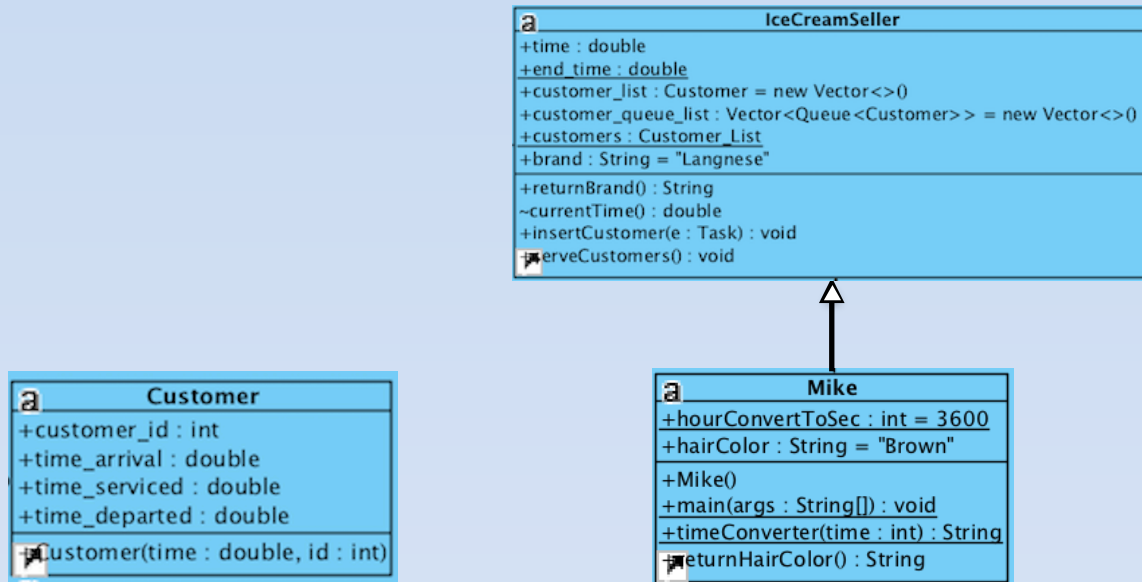
Objects



Objects



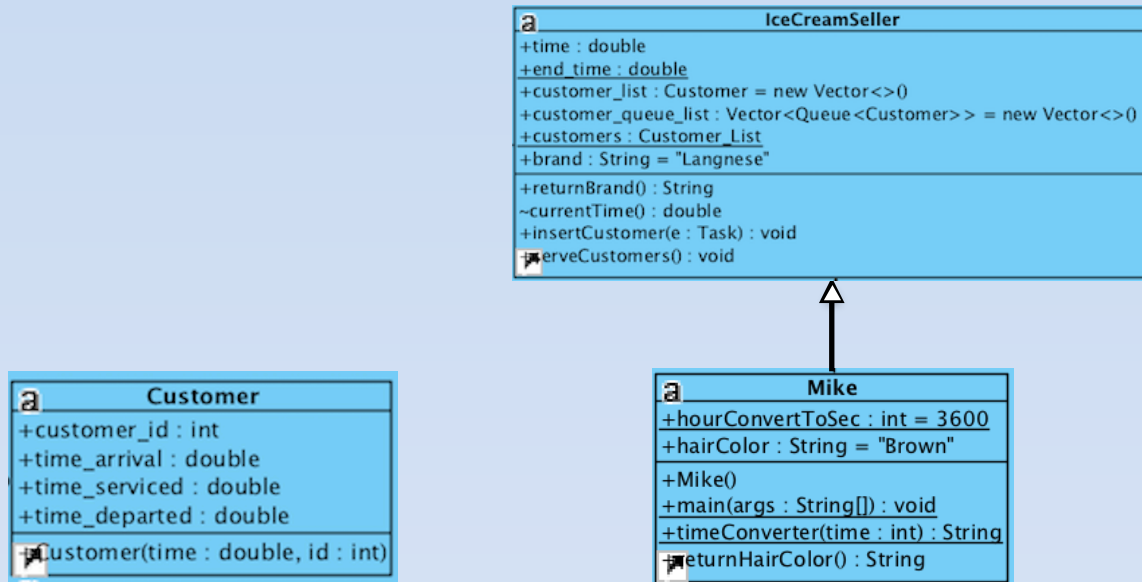
Objects



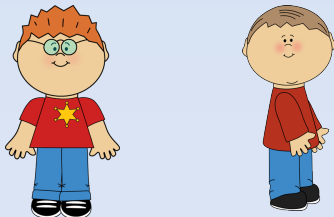
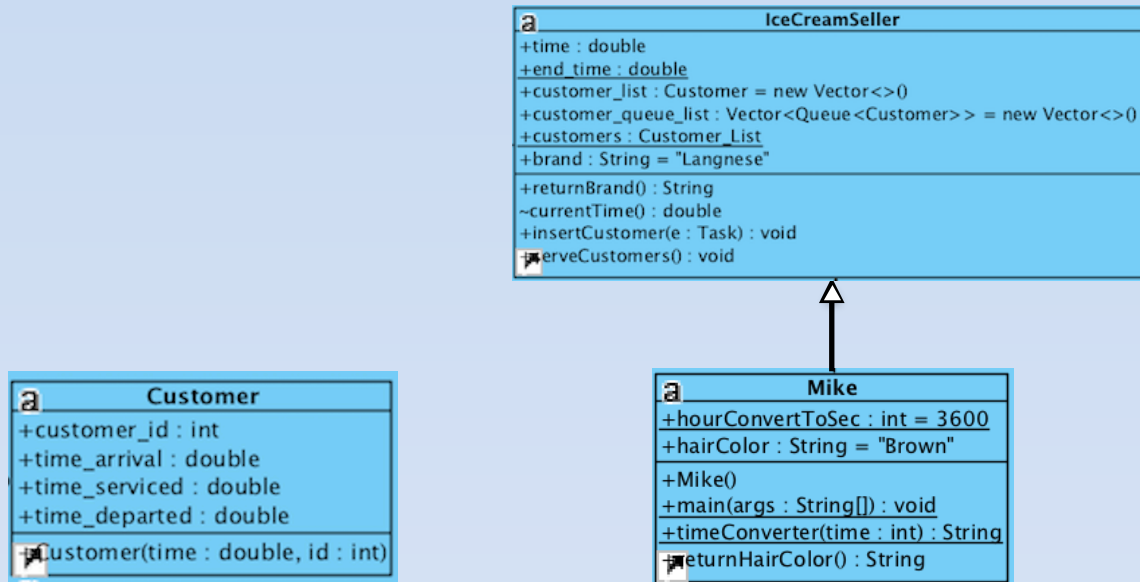
Customer



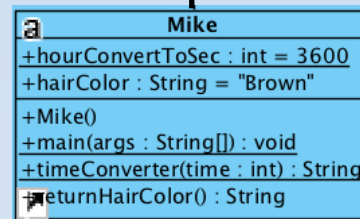
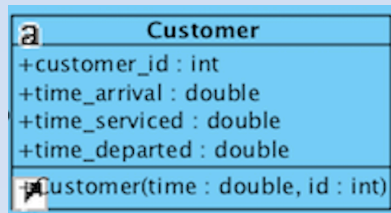
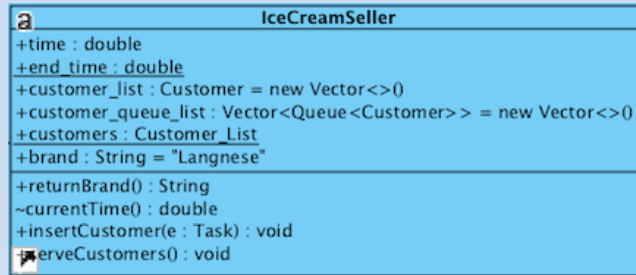
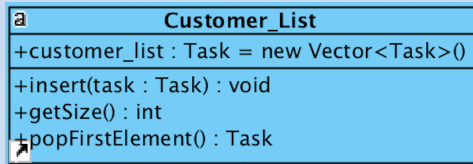
Objects



Objects



Objects



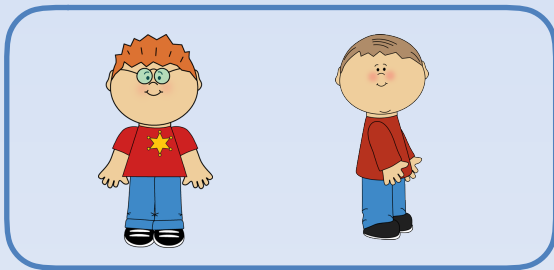
Objects

| Customer_List |
|--|
| +customer_list : Task = new Vector<Task>() |
| +insert(task : Task) : void |
| +getSize() : int |
| +popFirstElement() : Task |

| Customer |
|------------------------------------|
| +customer_id : int |
| +time_arrival : double |
| +time_serviced : double |
| +time_departed : double |
| +Customer(time : double, id : int) |

| IceCreamSeller |
|---|
| +time : double |
| +end_time : double |
| +customer_list : Customer = new Vector<>() |
| +customer_queue_list : Vector<Queue<Customer>> = new Vector<>() |
| +customers : Customer_List |
| +brand : String = "Langnese" |
| +returnBrand() : String |
| +currentTime() : double |
| +insertCustomer(e : Task) : void |
| +serveCustomers() : void |

| Mike |
|-------------------------------------|
| +hourConvertToSec : int = 3600 |
| +hairColor : String = "Brown" |
| +Mike() |
| +main(args : String[]) : void |
| +timeConverter(time : int) : String |
| +returnHairColor() : String |



Customer_List



Objects

| Customer_List |
|--|
| +customer_list : Task = new Vector<Task>() |
| +insert(task : Task) : void |
| +getSize() : int |
| +popFirstElement() : Task |

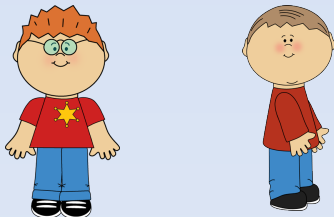
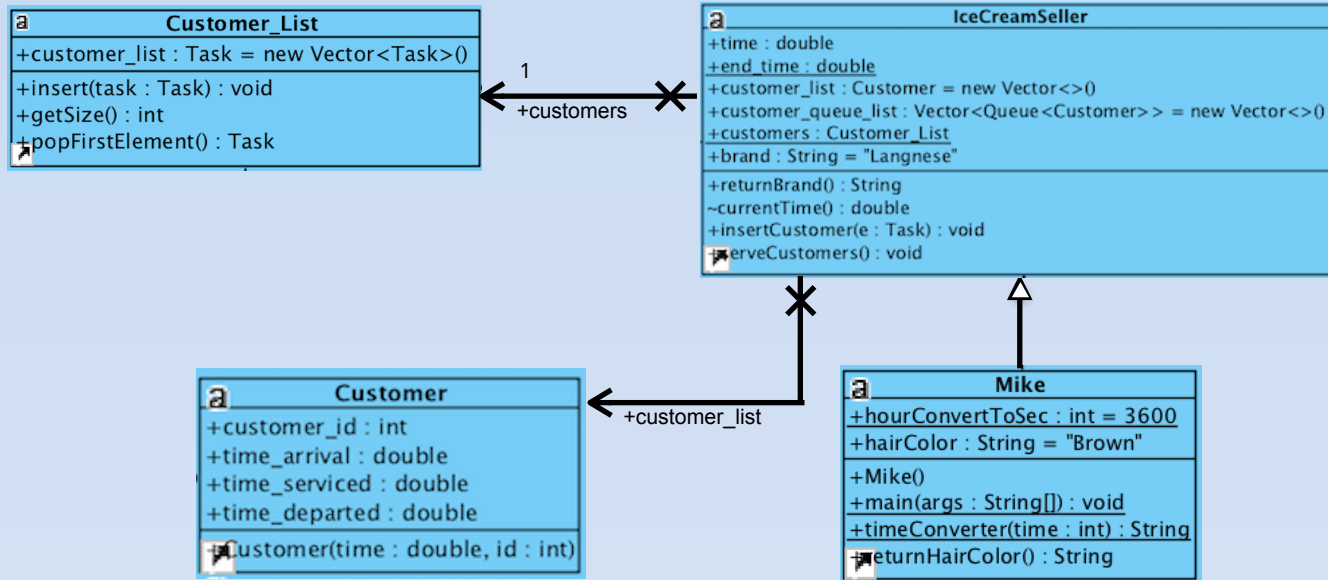
| IceCreamSeller |
|---|
| +time : double |
| +end_time : double |
| +customer_list : Customer = new Vector<>() |
| +customer_queue_list : Vector<Queue<Customer>> = new Vector<>() |
| +customers : Customer_List |
| +brand : String = "Langnese" |
| +returnBrand() : String |
| ~currentTime() : double |
| +insertCustomer(e : Task) : void |
| +serveCustomers() : void |

| Customer |
|------------------------------------|
| +customer_id : int |
| +time_arrival : double |
| +time_served : double |
| +time_departed : double |
| +Customer(time : double, id : int) |

| Mike |
|-------------------------------------|
| +hourConvertToSec : int = 3600 |
| +hairColor : String = "Brown" |
| +Mike() |
| +main(args : String[]) : void |
| +timeConverter(time : int) : String |
| +returnHairColor() : String |



Objects



Tasks



Tasks

| a | Task |
|---|---|
| | <code>+time : double</code> |
| | <code>+hourConvertToSec : int = 3600</code> |
| | <code>+minConvertToSec : int = 60</code> |
| | <code>+scoopServeTime : int = 30</code> |
| | <code>+run(seller : IceCreamSeller) : void</code> |
| | <code>+lessThan(task : Task) : boolean</code> |
| | <code>+customerArrivalTime(time : double) : Double</code> |
| | <code>+customerScoopServeTime(time : double) : Double</code> |
| | <code>+assignTime(startTime : int, endTime : int) : Double</code> |
| | <code>+assignNumScoops(array : int[]) : Double</code> |



Tasks

| a | Task |
|---|---|
| | <code>+time : double</code> |
| | <code>+hourConvertToSec : int = 3600</code> |
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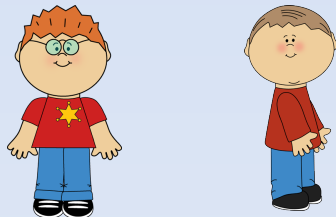
| a | Arrival |
|---|--|
| | ~createdCustomerID : int ~arrival : double = 0 +customersArrived : int[] = new int[9] +hourConvertToSec : int = 3600 +Arrival(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnArrivedCustomers() : int[] |



Tasks

| a | Task |
|---|---|
| | <u>+time : double</u> |
| | <u>+hourConvertToSec : int = 3600</u> |
| | <u>+minConvertToSec : int = 60</u> |
| | <u>+scoopServeTime : int = 30</u> |
| | <u>+run(seller : IceCreamSeller) : void</u> |
| | <u>+lessThan(task : Task) : boolean</u> |
| | <u>+customerArrivalTime(time : double) : Double</u> |
| | <u>+customerScoopServeTime(time : double) : Double</u> |
| | <u>+assignTime(startTime : int, endTime : int) : Double</u> |
| | <u>+assignNumScoops(array : int[]) : Double</u> |

| a | Arrival |
|---|---|
| | <u>~createdCustomerID : int</u> |
| | <u>~arrival : double = 0</u> |
| | <u>+customersArrived : int[] = new int[9]</u> |
| | <u>+hourConvertToSec : int = 3600</u> |
| | <u>+Arrival(time : double)</u> |
| | <u>+run(seller : IceCreamSeller) : void</u> |
| | <u>+timeConverter(time : int) : String</u> |
| | <u>+returnArrivedCustomers() : int[]</u> |



Arrival



Tasks

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Arrival



Tasks

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| | +time : double +hourConvertToSec : int = 3600 +minConvertToSec : int = 60 +scoopServeTime : int = 30 +run(seller : IceCreamSeller) : void +lessThan(task : Task) : boolean +customerArrivalTime(time : double) : Double +customerScoopServeTime(time : double) : Double +assignTime(startTime : int, endTime : int) : Double +assignNumScoops(array : int[]) : Double |

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Arrival



Serve

Tasks

| a | Task |
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| | +time : double +hourConvertToSec : int = 3600 +minConvertToSec : int = 60 +scoopServeTime : int = 30 |
| | +run(seller : IceCreamSeller) : void +lessThan(task : Task) : boolean +customerArrivalTime(time : double) : Double +customerScoopServeTime(time : double) : Double +assignTime(startTime : int, endTime : int) : Double +assignNumScoops(array : int[]) : Double |

| a | Arrival |
|---|---|
| | ~createdCustomerID : int ~arrival : double = 0 +customersArrived : int[] = new int[9] +hourConvertToSec : int = 3600 |
| | +Arrival(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnArrivedCustomers() : int[] |

| a | Serve |
|---|--|
| | +customersServed : int[] = new int[9] +hourConvertToSec : int = 3600 |
| | +Serve(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnServedCustomers() : int[] |



Arrival



Serve

Tasks

| a | Task |
|---|--|
| | +time : double +hourConvertToSec : int = 3600 +minConvertToSec : int = 60 +scoopServeTime : int = 30 +run(seller : IceCreamSeller) : void +lessThan(task : Task) : boolean +customerArrivalTime(time : double) : Double +customerScoopServeTime(time : double) : Double +assignTime(startTime : int, endTime : int) : Double +assignNumScoops(array : int[]) : Double |

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Arrival



Serve



Tasks

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Arrival



Serve



Tasks

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| | +customersServed : int[] = new int[9] +hourConvertToSec : int = 3600 +Serve(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnServedCustomers() : int[] |



Arrival



Serve



Depart

Tasks

| a | Task |
|---|--|
| | +time : double +hourConvertToSec : int = 3600 +minConvertToSec : int = 60 +scoopServeTime : int = 30 +run(seller : IceCreamSeller) : void +lessThan(task : Task) : boolean +customerArrivalTime(time : double) : Double +customerScoopServeTime(time : double) : Double +assignTime(startTime : int, endTime : int) : Double +assignNumScoops(array : int[]) : Double |

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|---|--|
| | ~createdCustomerID : int ~arrival : double = 0 +customersArrived : int[] = new int[9] +hourConvertToSec : int = 3600 +Arrival(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnArrivedCustomers() : int[] |

| a | Serve |
|---|---|
| | +customersServed : int[] = new int[9] +hourConvertToSec : int = 3600 +Serve(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnServedCustomers() : int[] |

| a | Depart |
|---|---|
| | +Depart(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String |



Arrival



Serve



Depart

Tasks

| a | Task |
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| | +time : double +hourConvertToSec : int = 3600 +minConvertToSec : int = 60 +scoopServeTime : int = 30 +run(seller : IceCreamSeller) : void +lessThan(task : Task) : boolean +customerArrivalTime(time : double) : Double +customerScoopServeTime(time : double) : Double +assignTime(startTime : int, endTime : int) : Double +assignNumScoops(array : int[]) : Double |

Arrival, Serve and Depart inherit from Task

| a | Arrival |
|---|--|
| | ~createdCustomerID : int ~arrival : double = 0 +customersArrived : int[] = new int[9] +hourConvertToSec : int = 3600 +Arrival(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnArrivedCustomers() : int[] |

| a | Serve |
|---|---|
| | +customersServed : int[] = new int[9] +hourConvertToSec : int = 3600 +Serve(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String +returnServedCustomers() : int[] |

| a | Depart |
|---|---|
| | +Depart(time : double) +run(seller : IceCreamSeller) : void +timeConverter(time : int) : String |



Arrival

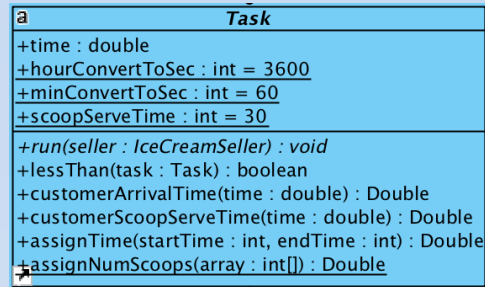


Serve

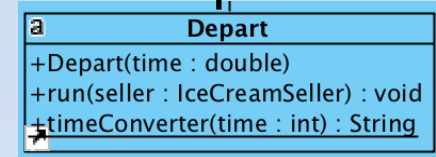
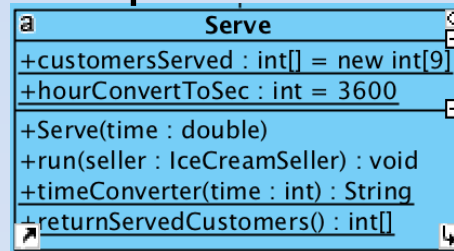
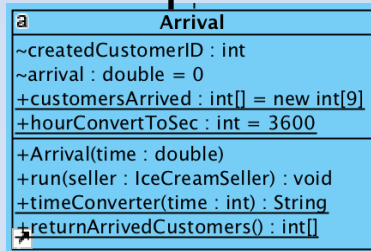


Depart

Tasks



Arrival, Serve and Depart inherit from Task



Arrival

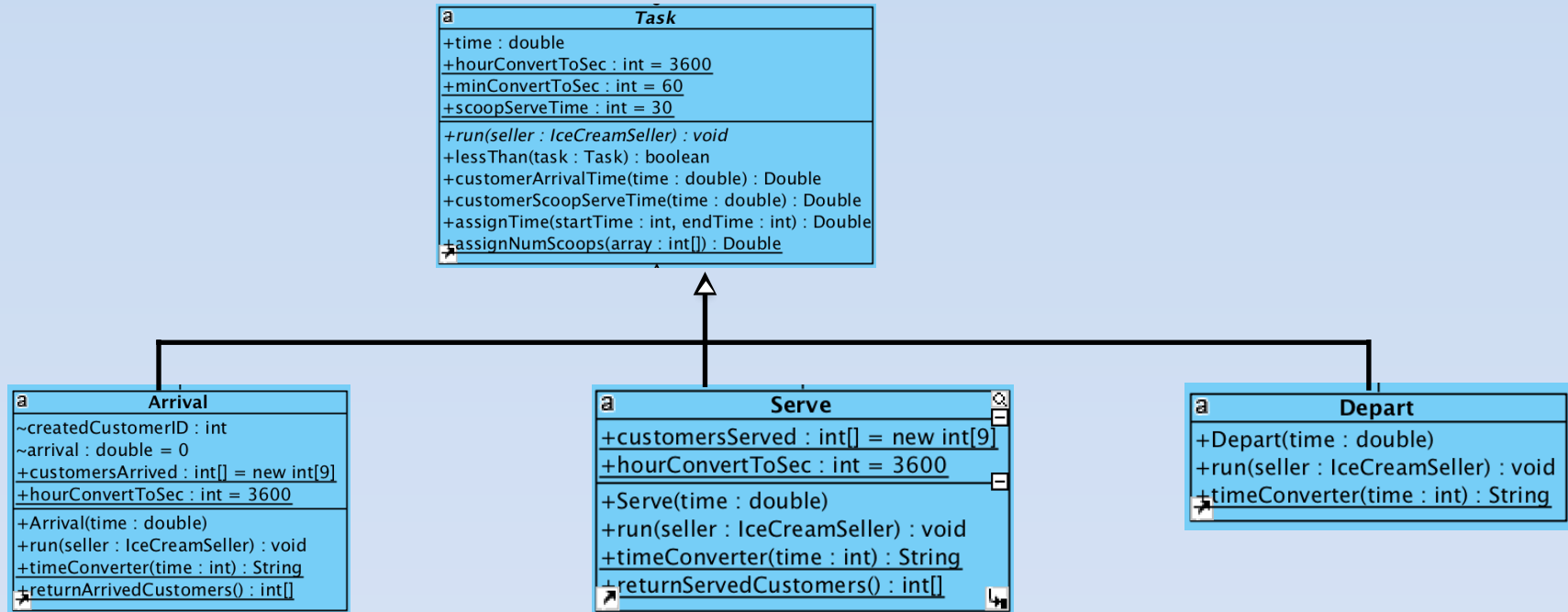


Serve



Depart

Tasks



Arrival

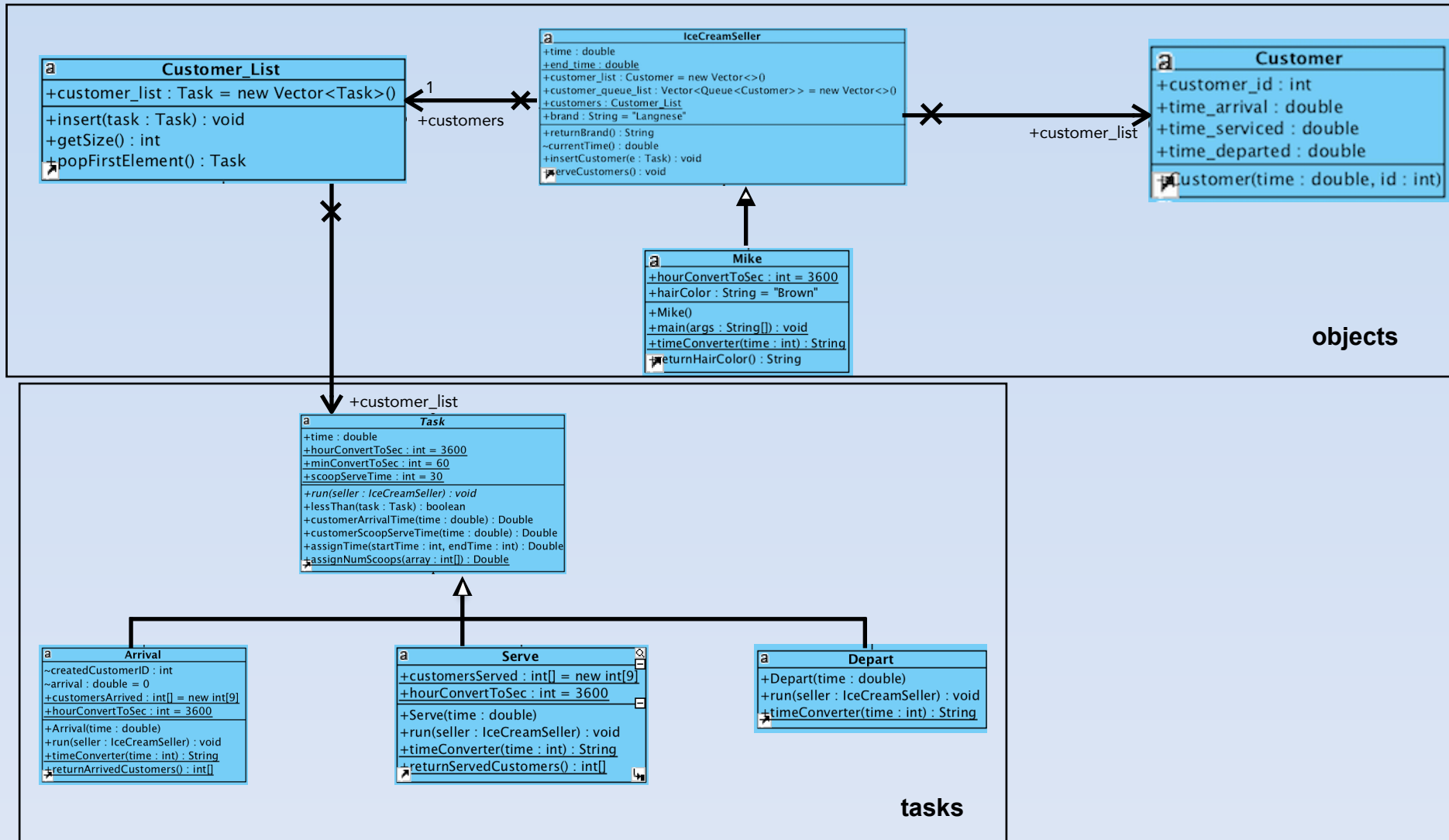


Serve



Depart

UML Diagram



Q & A

