Informatics Institute of Technology

Department of Computing

(B.Eng.) in Software Engineering

Module: 5COSC020C – Database Systems

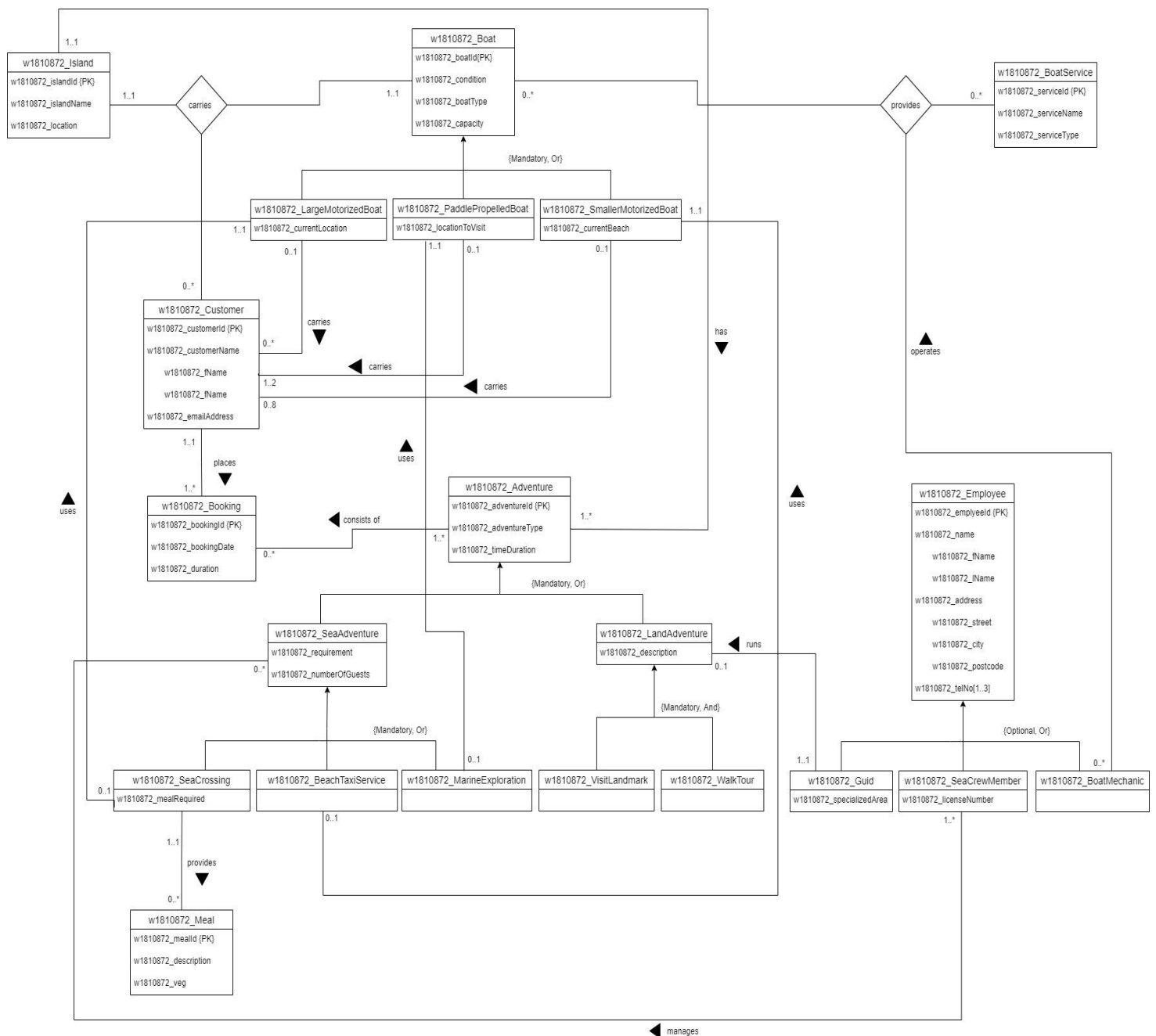**Module Leader: Mr. Ragu Sivaraman**

INDIVIDUAL COURSEWORK - Part A

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Contents

1. Conceptual ERD for ArchipelagoCrazy (Part – A).

2. Data dictionary to document entities for ArchipelagoCrazy (Part–A).

Entity name	Description
w1810872_Island	General term describing all islands with attractive sites including mainland, that belong to ArchipelagoCrazy.
w1810872_Boat	General term describing all types of boats that belong to ArchipelagoCrazy.
w1810872_Customer	General term that describes all customers of ArchipelagoCrazy.
w1810872_Booking	General term that describes bookings placed for services offered by ArchipelagoCrazy.
w1810872_Adventure	General term that describes all adventures organised by ArchipelagoCrazy.
w1810872_Employee	General term describing all staff members employed by ArchipelagoCrazy.
w1810872_BoatService	General term describing all types of services done to boats.
w1810872_Meal	General term describing all meals organized by ArchipelagoCrazy.

General entity	Specialized entity	Explanation
w1810872_Boat	w1810872_LargMotorizedBoat	A specialized term that describes large boats which can handle higher number of customers.
	w1810872_PaddlePropelledBoat	A specialized term that describes a boat which can be used for marine exploration.
	w1810872_SmallMotorizedBoat	A specialized term that describes small boat which can be used for local beach taxi service.
w1810872_Adventure	w1810872_SeaAdventure	A specialised term that describes adventures related to sea.
	w1810872_LandAdventure	A specialised term that describes adventures related to land.
w1810872_SeaAdventure	w1810872_SeaCrossing	A specialised term describing the sea adventure of crossing between one or more islands.
	w1810872_BeachTaxiService	A specialised term describing the sea adventure of moving between beaches.
	w1810872_MarineExploration	The specialised term that describes the sea adventure of exploring islands, accessing remote bays and creeks.
w1810872_LandAdventure	w1810872_VisitLandmark	A specialised term that describes the land adventure of visiting landmark.
	w1810872_WalkingTour	A specialised term that describes the land adventure of a walking tour with a guid.

w1810872_Emplyee	w1810872_Guid	A specialised term that describes the tour guid who guides customers as an employee
	w1810872_SeaCrewMember	A specialised term for members of the sea crew who organises and manages boat service as an employee.
	w1810872_BoatMechanic	A specialised term that describes boat mechanics who services boats as an employee.

3. Data Dictionary to document relationships and multiplicities for ArchipelagoCrazy (Part – A).

3.1. Binary Relationships.

Entity name	Multiplicity	Relationship	Multiplicity	Entity name	Justifications for the multiplicity (4 statements for each relationship)
w1810872_Island	1..1	has	1..*	w1810872_Adventure	An island must have at least one adventure
					An island may have many adventures
					An adventure must belong to at least one island
					An adventure must belong to one and only one island
w1810872_Customer	1..1	places	1..*	w1810872_Booking	One customer must place at least one booking
					One customer may place many bookings
					One booking must belong to at least one customer
					One booking must belong to one and only one customer
w1810872_Boat		carries		w1810872_Customer	A boat may or may not carry a customer to an island.
					A boat may carry many customers to one islands.
					A customer must use at least one boat to visit an island.
					A customer must use one and only one boat to visit an island.
w1810872_Booking	0..*	consists of	1..*	w1810872_Adventure	One booking consists of at least one adventure
					One booking may consist of many adventures

					One adventure may or may not be booked.
					One adventure may or may be booked by many.
w1810872_LargeMotorizedBoat	0..1	carries	0..*	w1810872_Customer	A large motorized boat may or may not carry any customer
					A large motorized boat may carry many customers.
					A customer may or may not be carried by any large motorized boat.
					A customer must be carried by one and only one large motorized boat.
w1810872_PaddlePropelledBoat	0..1	carries	1..2	w1810872_Customer	A paddle boat must carry at least one customer
					A paddle boat can carry a maximum of two customers
					A customer may or may not be carried by a paddle boat
					A customer may be carried by one and only one paddle boat
w1810872_SmallerMotorizedBoat	0..1	carries	0..8	w1810872_Customer	A small motorized boat may or may not carry any customer.
					A small motorized boat may carry a maximum of eight customers.
					A customer may or may not be carried by any small motorized boat.
					A customer may be carried by one and only one small motorized boat.
w1810872_Guid	1..1	runs	0..1	w1810872_LandAdventure	One guide may or may not run any land adventure.
					One guide may run one and only one land adventure

					One land adventure must be run by at least one guide
					One land adventure must be run by one and only one guide
w1810872_SeaCrewMember	1..*	manages	0..*	w1810872_SeaAdventuere	One member of sea crew may or may not manage any sea adventure
					One sea crew member may manage many sea adventures
					One sea adventure must be managed by at least one member of sea crew
					One sea adventure may be managed by many sea crew members
w1810872_SeaCrossing	0..1	uses	1..1	w1810872_LargeMotorizedBoat	One sea crossing must use at least one large motorized boat.
					One sea crossing must use one and only one large motorized boat.
					One large motorized boat may or may not be used for an sea crossing.
					One large motorized boat may be used for one and only one sea crossing.
w1810872_BrachTaxiService	0..1	uses	1..1	w1810872_SmallerMotorizedBoat	One beach taxi service must use at least one smaller motorized boat.
					One beach taxi service may use one and only one smaller motorized boat.
					One smaller motorized boat may or may not be used by any beach taxi service.
					One smaller motorized boat may be used for one and only one beach taxi service.

w1810872_MarineExploration	0..1	uses	1..1	w1810872_PaddlePropelledBoat	One marine exploration must use at least one paddle boat
					One marine exploration may use one and only one paddle boat
					One paddle boat may or may not be used by any marine exploration
					One paddle boat may be used by one and only one paddle boat
w1810872_SeaCrossing	1..1	provides	0..*	w1810872_Meal	One sea crossing may or may not provide a meal.
					One sea crossing may provide many meals.
					One meal must be provided by at least one sea crossing
					One meal may be provided by one and only one sea crossing

3.2. Turnery Relationships.

Entity name	Multiplicity	Relationship	Multiplicity	Entity name	Justifications for the multiplicity
w1810872_Boat	1..1	carries	0..* 1..1	w1810872_Customer w1810872_Island	A boat may or may not carry any customer to at least one island.
					A boat may carry many customers to one and only one island.
					A customer may be carried to at least one island by at least one boat
					A customer may be carried to one and only one island by one and only one boat
					An island may or may not be carried customers by at least one boat.
					An island may be carried many customers by one and only one boat.
w1810872_BoatMechanic	0..*	provides	0..* 0..*	w1810872_BoatService w1810872_Boat	One Boat mechanic may or may not provide any boat service to any boat.
					One boat mechanic may provide many services to many boats.
					One boat service may or may not be provided to any boat by any boat mechanic.
					One boat service may be provided to many boats by many boat mechanics.
					One boat may or may not be provided any service by any boat mechanic.
					One boat may be provided many services by many boat mechanics.

Entity name	Attribute for this entity	justification
w1810872_Island	w1810872_islandId {PK}	To uniquely identify every island
	w1810872_islandName	Ever island has a name
	w1810872_location	Every island has its own geographic location
w1810872_Boat	w1810872_boatId {PK}	Uniquely identifies a boat
	w1810872_condition	About the condition status of the boat
	w1810872_boatType	Type of the boat
	w1810872_capacity	Capacity of each boat
w1810872_LargeMotorizedBoat	w1810872_currentLocation	Current location where the large, motorized boat is
w1810872_PaddlePropelledBoat	w1810872_locationToVisit	Location it must visit if available
w1810872_SmallerMotorizedBoat	w1810872_currentBeach	Current beach it is located in
w1810872_Customer	w1810872_customerId {PK}	Uniquely identifies a customer
	w1810872_customerName	
	w1810872_fName	First name of customer
	w1810872_lName	Last name of customer
	w1810872_emailAddress	E-mail address of customer
w1810872_Booking	w1810872_bookingId {PK}	Each booking has a number to uniquely identify
	w1810872_bookingDate	Date the booking was made
	w1810872_duration	Time duration taken for a particular event booked
w1810872_Adventure	w1810872_adventureId {PK}	Each adventure has a unique ID number
	w1810872_adventureType	Type of adventure
	w1810872_timeDuration	Time consuming to complete adventure
w1810872_SeaAdventure	w1810872_requirement	Requirements for the sea adventure
	w1810872_numberOfGuests	Number of guests participating in an adventure
w1810872_SeaCrossing	w1810872_crossingLocation	To which island is the sea crossing is for
	w1810872_mealRequired	Whether a meal is required or not
w1810872_BeachTaxiService		

w1810872_MarineExploration		
w1810872_LandAdventure	w1810872_description	Short description about the land adventure
w1810872_VisitLandmark		
w1810872_WalkTour		

w1810872_Employee	w1810872_emplyeeId {PK}
	
	w1810872_name
	
	  w1810872_fName
	
	  w1810872_lName
	
	w1810872_Address
	
	  w1810872_street
	
	  w1810872_city
	
	  w1810872_postcode
	
	w1810872_tellNo[1..3]
		Each employee has an ID to be uniquely identified
		
		First name of employee
		
		Last name of employee
		
		Street name of address of employee
		
		City of employee's address
		
		Postcode of address
		
		Telephone number of each employee

w1810872_Guid	w1810872_specializedArea	Specialise area of study regarding various landmarks
w1810872_SeaCrewMember	w1810872_licenseNumber	Diving/ Swimming license number of each sea crew member
w1810872_BoatMechanic		
w1810872_BoatService	w1810872_serviceId {PK} w1810872_serviceName w1810872_serviceType	To uniquely identify each service Name of service Type of service based on various parts of boat
w1810872_Meal	w1810872_mealId {PK} w1810872_description w1810872_veg	Uniquely identifies each meal Short description about what is included in the meal Is the meal vegetarian or non-vegetarian