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| --- | --- |
| **User**  Administrator, Shopper | |
| ID  password  sessionID |  |

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| --- | --- |
| User  **Administrator** | |
| allCategories  allDCenters  sessionID  addAdmin  addCategory  getScreenReport  addProduct  changePhoto  changeDescription  changePrice  changeAvailableQuantity  changeTotalQuantity  seeProductsByCategory  seeProductsByAvailability  addNewDistributionCenter | Category  Product  DistributionCenter  Graph  Node  ProductManager |

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| --- | --- |
| User  **Shopper**  Customer | |
| shoppingCart  sessionID  customerID  idNum  shoppingOrder  cancelProduct  saveCart  uploadCart  addToShoppingCart  removeFromCart  cancelCart | Product  ShoppingOrder |

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| --- | --- |
| Shopper  **Customer** | |
| city  street  customerID  orderMap  invoiceList  sessionID  shoppingCart  shippingPrice  shoppingOrder  totalCost  totalInvoice  shippingCost  ship  emptyOrderMap  purchase | DistributionCenter  Invoice  Order  Product  ShoppingOrder |

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| **UserManager** | |
| userMap  activeSessionIDs  user  adminRegistration  shopperRegistration  saveToFile  readFromFile | User |

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| **Product**  Invoice, Order | |
| category  image  ID  description  price  quantityDistributionMap  availableQ | DistributionCenter  DistributionCenterManager |

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| **ProductManager** | |
| products  addProduct  saveToFile  readFromFile | Product |

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| **Category** | |
| code  description  products  searchProduct  searchPriceRange | Product |

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| **CategoryManager** | |
| idNum  categories  add  saveToFile  readFromFile | Category |

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| Product  **Invoice** | |
| quantity  cost |  |

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| --- | --- |
| Product  **Order** | |
| customer  quantityDistributionCenter | Customer  DistributionCenter |

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| --- | --- |
| **ShoppingOrder** | |
| orders  idNum  orderID | Product |

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| --- | --- |
| **DistributionCenter** | |
| centerName  centerCity  centerID  products | Product |

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| **DistributionCenterManager** | |
| distributionmanagers  transferProduct  add  saveToFile  readFromFile | DistributionCenter  Product |

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| **Queue** | |
| queue  pop  add  isEmpty |  |

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| **Node** | |
| name  edges  child  parent  cumulativeCost  existsDistribCenter  distributionCenter  equals  compareTo | DistributionCenter  Edge |

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| **Edge** | |
| jointNode  cost | Node |

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| **Graph** | |
| nodes  addNode  addEdge  findPath  returnPathFrom  resetGraph  addDistributionCenter  getClosestDistribution  getNode  getCost | DistributionCenter  Node  Queue |

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| **CreateGraph** | |
| main | Node  Graph |

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| **ShoppingCart** | |
| shoppingCart | Product |

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| --- | --- |
| **ChopDictionary** | |
| list  populate  returnNode  getList | DoubleArray |

|  |  |
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| **DoubleArray** | |
| array  index  add  isFull |  |