```sql
SELECT W_JOB_F.Location_ID,Location_Name,W_SALES_CLASS_D.Sales_class_id,Sales_Class_Desc,Time_Year,Time_Month,Base_price,
    SUM(Quantity_Ordered) AS SUMQTY,SUM(Quantity_Ordered*Unit_Price) AS Job_Amount
FROM W_JOB_F
INNER JOIN W_LOCATION_D ON W_JOB_F.Location_ID = W_LOCATION_D.Location_ID
INNER JOIN W_SALES_CLASS_D ON W_JOB_F.Sales_class_id = W_SALES_CLASS_D.Sales_class_id
INNER JOIN W_TIME_D ON W_TIME_D.Time_id = W_JOB_F.Contract_date
GROUP BY W_JOB_F.Location_ID,Location_Name,W_SALES_CLASS_D.Sales_class_id,Sales_Class_Desc,Time_Year,Time_Month,Base_price;
```

Data Output   Explain   Messages   Notifications

	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	time_year integer	time_month integer	base_price numeric (8,4)	sumqty bigint	job_amount numeric
1	6	Los Angeles	1	Debit Smart	2013	7	1.6000	2952700	4401069.00
2	9	Montreal	1	Debit Smart	2013	5	1.6000	292700	459539.00
3	7	Seattle	6	Loyalty NoSmart	2014	10	0.8000	141000	111390.00
4	6	Los Angeles	3	Debit NoSmart	2014	9	0.8000	366500	285870.00
5	8	Toronto	1	Debit Smart	2013	2	1.6000	470200	728810.00
6	3	Chicago	5	Prepaid NoSmart	2013	4	0.8000	1945200	1476888.00
7	9	Montreal	4	Credit NoSmart	2015	4	0.8000	357600	280440.00
8	12	Birmingham	2	Credit Smart	2015	3	1.6000	1209200	1777524.00
9	8	Toronto	4	Credit NoSmart	2015	1	0.8000	2402600	1827214.00
10	8	Toronto	2	Credit Smart	2015	1	1.6000	1238300	1807918.00
11	2	Atlanta	6	Loyalty NoSmart	2013	9	0.8000	3737400	2728302.00
12	11	London	5	Prepaid NoSmart	2014	4	0.8000	1093900	809486.00
13	6	Los Angeles	4	Credit NoSmart	2014	9	0.8000	1483300	1107940.00
14	1	New York	5	Prepaid NoSmart	2013	4	0.8000	309500	241410.00
15	3	Chicago	5	Prepaid NoSmart	2014	1	0.8000	850400	654884.00
16	2	Atlanta	1	Debit Smart	2015	1	1.6000	768100	1144469.00
17	3	Chicago	1	Debit Smart	2013	6	1.6000	1321800	1946124.00
18	8	Toronto	4	Credit NoSmart	2015	7	0.8000	522800	409392.00
19	3	Chicago	4	Credit NoSmart	2014	6	0.8000	1726000	1282856.00
20	1	New York	3	Debit NoSmart	2014	1	0.8000	2245700	1673030.00
21	7	Seattle	6	Loyalty NoSmart	2015	5	0.8000	1289300	964362.00
22	8	Toronto	5	Prepaid NoSmart	2015	4	0.8000	855600	633144.00
23	6	Los Angeles	6	Loyalty NoSmart	2014	6	0.8000	445300	342881.00
24	5	Denver	5	Prepaid NoSmart	2013	4	0.8000	749000	562884.00

```sql
11  -- Q1-2
12  SELECT W_JOB_F.JOB_ID,W_JOB_F.Location_ID,W_Location_D.Location_Name,Unit_Price,Quantity_Ordered,Time_Year,Time_Month,
13      SUM(Invoice_Amount) AS SUMINVAMT,SUM(Invoice_Quantity) AS SUMINVQTY
14  FROM W_JOB_F
15  INNER JOIN W_LOCATION_D ON W_JOB_F.Location_ID = W_LOCATION_D.Location_ID
16  INNER JOIN W_TIME_D ON W_TIME_D.Time_id = W_JOB_F.Contract_date
17  INNER JOIN W_SUB_JOB_F ON W_JOB_F.Job_Id = W_SUB_JOB_F.Job_Id
18  INNER JOIN W_JOB_SHIPMENT_F ON W_JOB_SHIPMENT_F.Sub_Job_Id = W_Sub_Job_F.Sub_Job_Id
19  INNER JOIN W_INVOICELINE_F ON W_Job_Shipment_F.Invoice_Id = W_InvoiceLine_F.Invoice_Id
20  GROUP BY W_JOB_F.JOB_ID,W_JOB_F.Location_ID,W_Location_D.Location_Name,Unit_Price,Quantity_Ordered,Time_Year,Time_Month;
21
22
23
```

Data Output   Explain   Messages   Notifications

	job_id integer	location_id integer	location_name character varying (50)	unit_price numeric (6,2)	quantity_ordered integer	time_year integer	time_month integer	suminvamt numeric	suminvqty bigint
1	339993	1	New York	1.60	48000	2014	4	76800.00	48000
2	339994	9	Montreal	0.76	725000	2013	7	551000.00	725000
3	339995	6	Los Angeles	0.76	707100	2015	1	537396.00	656829
4	339996	9	Montreal	1.57	310300	2013	10	487014.00	310200
5	339997	12	Birmingham	1.54	467000	2014	12	611380.00	384087
6	339998	5	Denver	0.77	477200	2013	7	367290.00	474948
7	339999	7	Seattle	0.78	313300	2014	7	244374.00	300175
8	340000	6	Los Angeles	1.46	1409900	2013	7	1819598.00	1202736
9	340001	11	London	0.73	1377100	2014	4	692113.00	900374
10	340002	4	Dallas	0.74	1106400	2013	5	689976.00	921216
11	340003	10	Vancouver	0.76	570600	2014	1	267520.00	352000
12	340004	6	Los Angeles	0.75	749100	2015	1	410550.00	547400
13	340005	2	Atlanta	0.80	78100	2014	5	49920.00	62400
14	340006	2	Atlanta	0.73	1011400	2013	4	685032.00	918968
15	340007	4	Dallas	1.58	193300	2014	11	244268.00	154600
16	340008	9	Montreal	0.74	960400	2013	8	664816.00	890366
17	340009	5	Denver	0.79	196400	2014	8	155156.00	187230
18	340010	12	Birmingham	1.46	1188500	2013	2	1370502.00	899490
19	340011	7	Seattle	0.77	653400	2013	7	471625.00	606802
20	340012	9	Montreal	0.73	985800	2014	9	541368.00	715158
21	340013	10	Vancouver	0.73	1389100	2013	4	818403.00	1073014

```sql
33  -- Q1-3
34  SELECT JOB_ID,Location_ID,Location_Name,Time_Year,Time_Month,SUMLABOUR, SUMMATERIAL, SUMOVERHEAD,SUMMACHINE,SUMQTY,TOTALCOST,TOTALCOST/SUMQTY AS UNIT_PRICE
35  FROM (
36      SELECT W_SUB_JOB_F.JOB_ID,W_SUB_JOB_F.Location_ID,Location_Name,Time_Year,Time_Month,
37          SUM(Cost_Labor) AS SUMLABOUR,SUM(Cost_Material) AS SUMMATERIAL,SUM(Cost_Overhead) AS SUMOVERHEAD,
38          SUM(Machine_Hours*Rate_per_hour) AS SUMMACHINE,SUM(Quantity_produced) AS SUMQTY,
39          SUM(Cost_Labor+Cost_Material+Cost_Overhead+Machine_Hours*Rate_per_hour) AS TOTALCOST
40      FROM W_SUB_JOB_F
41      INNER JOIN W_JOB_F ON W_SUB_JOB_F.Job_id = W_JOB_F.Job_id
42      INNER JOIN W_TIME_D ON W_Time_D.Time_id = W_Job_F.Contract_Date
43      INNER JOIN W_LOCATION_D ON W_location_d.location_id = W_SUB_JOB_F.Location_id
44      INNER JOIN W_MACHINE_TYPE_D ON W_SUB_JOB_F.Machine_Type_id = W_Machine_Type_D.Machine_Type_ID
45      GROUP BY W_SUB_JOB_F.JOB_ID,W_SUB_JOB_F.Location_ID,Location_Name,Time_Year,Time_Month
46  ) main;
```

Data Output | Explain | Messages | Notifications

	job_id integer	location_id integer	location_name character varying (50)	time_year integer	time_month integer	sumlabour numeric	summaterial numeric	sumoverhead numeric	summachine numeric	sumqty bigint	totalcost numeric	unit_price numeric
1	339993	1	New York	2014	4	13209.60	5983.30	2947.00	8576.0000	48000	30715.9000	0.63991458333333333333
2	339994	9	Montreal	2013	7	81402.08	25946.51	46303.58	66690.0000	725000	220342.1700	0.30392023448275862069
3	339995	6	Los Angeles	2015	1	84796.54	38462.71	36971.14	54678.0000	707100	214908.3900	0.30392927450148493848
4	339996	9	Montreal	2013	10	138356.56	17089.18	6645.79	32760.0000	310300	194851.5300	0.62794563325813728650
5	339997	12	Birmingham	2014	12	140706.72	35062.61	27312.69	84480.0000	467000	287562.0200	0.61576449678800856531
6	339998	5	Denver	2013	7	103287.18	19255.92	10316.94	14100.0000	477200	146960.0400	0.30796320201173512154
7	339999	7	Seattle	2014	7	25414.90	13844.86	33896.04	24500.0000	313300	97655.8000	0.31170060644749441430
8	340000	6	Los Angeles	2013	7	359342.79	130794.36	93514.34	239666.0000	1409900	823317.4900	0.58395452868997801263
9	340001	11	London	2014	4	238184.10	30865.28	49240.56	83756.0000	1377100	402045.9400	0.29195115823106528211
10	340002	4	Dallas	2013	5	152994.11	38069.87	41059.88	95174.0000	1106400	327297.8600	0.29582236080983369487
11	340003	10	Vancouver	2014	1	67783.49	40364.30	19194.15	46090.0000	570600	173431.9400	0.30394661759551349457
12	340004	6	Los Angeles	2015	1	103633.20	39233.73	24359.06	57420.0000	749100	224645.9900	0.29988785208917367508
13	340005	2	Atlanta	2014	5	14995.20	5181.34	2116.32	2696.0000	78100	24988.8600	0.31995979513444302177
14	340006	2	Atlanta	2013	4	147565.71	33967.03	33260.87	80270.0000	1011400	295063.6100	0.29173779909036978446
15	340007	4	Dallas	2014	11	61082.80	23748.99	9235.72	28080.0000	193300	122147.5100	0.63190641489912053802
16	340008	9	Montreal	2013	8	119689.37	55550.78	55071.15	53870.0000	960400	284181.3000	0.29589889629321116202
17	340009	5	Denver	2014	8	23583.71	8257.53	2901.29	27300.0000	196400	62042.5300	0.31589882892057026477
18	340010	12	Birmingham	2013	2	345656.18	84129.61	86608.81	177600.0000	1188500	693994.6000	0.58392477913336137989
19	340011	7	Seattle	2013	7	103616.13	24042.56	21879.69	51600.0000	653400	201138.3800	0.30783345576981940618

```sql
-- Q1-4
SELECT W_InvoiceLine_F.Location_Id, Location_Name,W_InvoiceLine_F.Sales_Class_Id, Sales_Class_Desc,Time_Year, Time_Month,
    SUM (Quantity_shipped - Invoice_Quantity ) as QTYRETURNED,
    SUM ((Quantity_shipped - Invoice_quantity) * (Invoice_amount/Invoice_quantity)) AS SUMAMTRETURNED
FROM W_INVOICELINE_F
INNER JOIN W_Location_D ON W_INVOICELINE_F.Location_Id = W_Location_D.Location_Id
INNER JOIN W_Sales_Class_D ON W_INVOICELINE_F.Sales_Class_Id = W_Sales_Class_D.Sales_Class_Id
INNER JOIN W_TIME_D ON W_INVOICELINE_F.INVOICE_SENT_DATE = W_TIME_D.TIME_ID
WHERE quantity_shipped - invoice_quantity > 0
GROUP BY W_InvoiceLine_F.Location_Id, Location_Name,W_InvoiceLine_F.Sales_Class_Id, Sales_Class_Desc,Time_Year, Time_Month;
```

Data Output | Explain | Messages | Notifications

	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	time_year integer	time_month integer	qtyreturned bigint	sumamtreturned numeric
1	1	New York	1	Debit Smart	2013	7	49154	97823.9968730456519316
2	1	New York	1	Debit Smart	2013	9	23331	44299.3670886075955569
3	1	New York	1	Debit Smart	2013	10	32487	60546.7592592592600213
4	1	New York	1	Debit Smart	2013	11	22662	42114.7488356996748676
5	1	New York	1	Debit Smart	2013	12	16350	32482.0000000000005450
6	1	New York	1	Debit Smart	2014	1	45948	79197.3632958801499774
7	1	New York	1	Debit Smart	2014	2	143338	261787.6875131894671413
8	1	New York	1	Debit Smart	2014	3	18009	35054.8111669845671370
9	1	New York	1	Debit Smart	2014	5	126053	254994.8910303928857458
10	1	New York	1	Debit Smart	2014	6	83316	162026.3157894736852668
11	1	New York	1	Debit Smart	2014	9	29824	54913.3162118780098184
12	1	New York	1	Debit Smart	2014	10	10953	19770.8856784903294332
13	1	New York	1	Debit Smart	2014	11	45110	79067.9839288500554675
14	1	New York	1	Debit Smart	2014	12	19078	37742.2650602409639361
15	1	New York	2	Credit Smart	2013	3	12264	24290.1971830985914104
16	1	New York	2	Credit Smart	2013	4	11880	25796.5714285714282320
17	1	New York	2	Credit Smart	2013	8	64172	121150.9054355919582219
18	1	New York	2	Credit Smart	2013	12	4928	8416.3595505617975424
19	1	New York	2	Credit Smart	2014	1	11500	23448.0519480519485000
20	1	New York	2	Credit Smart	2014	2	6590	11827.6565656565659560
21	1	New York	2	Credit Smart	2014	5	67760	137603.1914731633043808
22	1	New York	2	Credit Smart	2014	6	18962	36987.6049382716052426

```
74  -- Q-5
75  SELECT Job_id,Location_ID,Location_Name,Sales_class_id,sales_class_desc,Date_Promised,Quantity_Ordered,LastShipDate,SUMSHIPQTY,
76      getBusDaysDiff(LastShipDate,Date_Promised) AS DaysDiff
77  FROM (
78      SELECT W_JOB_F.Job_id,W_JOB_F.Location_ID,Location_Name,W_JOB_F.Sales_class_id,sales_class_desc,Date_Promised,Quantity_Ordered,
79          MAX(Actual_Ship_Date) AS LastShipDate,SUM(Actual_Quantity) AS SUMSHIPQTY
80      FROM W_JOB_F
81      INNER JOIN W_LOCATION_D ON W_JOB_F.Location_id =  W_LOCATION_D.Location_id
82      INNER JOIN W_SALES_CLASS_D ON W_Job_F.Sales_Class_Id = W_Sales_Class_D.Sales_Class_Id
83      INNER JOIN W_SUB_JOB_F ON W_Job_F.Job_Id = W_SUB_JOB_F.JOB_ID
84      INNER JOIN W_JOB_SHIPMENT_F ON W_SUB_JOB_F.SUB_JOB_ID = W_JOB_SHIPMENT_F.SUB_JOB_ID
85      WHERE Actual_Ship_Date > Date_Promised
86      GROUP BY W_JOB_F.Job_id,W_JOB_F.Location_ID,Location_Name,W_JOB_F.Sales_class_id,sales_class_desc,Date_Promised,Quantity_Ordered
87  ) main
88  WHERE LastShipDate > Date_Promised;
89
```

Data Output | Explain | Messages | Notifications

	job_id integer	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	date_promised integer	quantity_ordered integer	lastshipdate integer	sumshipqty bigint	daysdiff bigint
1	340025	12	Birmingham	3	Debit NoSmart	20130409	452000	20130411	55300	2
2	340057	8	Toronto	6	Loyalty NoSmart	20131129	504100	20131218	504000	13
3	340059	5	Denver	4	Credit NoSmart	20130618	543500	20130619	67700	1
4	340138	5	Denver	2	Credit Smart	20130923	1040400	20130926	493000	3
5	340170	10	Vancouver	1	Debit Smart	20140717	463400	20140723	433300	4
6	340275	12	Birmingham	2	Credit Smart	20140108	682200	20140109	108700	1
7	340293	8	Toronto	5	Prepaid NoSmart	20140303	717100	20140304	220600	1
8	340294	12	Birmingham	5	Prepaid NoSmart	20130715	976400	20130717	133600	2
9	340339	7	Seattle	4	Credit NoSmart	20140122	720500	20140207	720300	12
10	340342	10	Vancouver	3	Debit NoSmart	20150120	242600	20150128	242400	6
11	340411	6	Los Angeles	5	Prepaid NoSmart	20130313	78300	20130315	78300	2
12	340440	11	London	2	Credit Smart	20140714	867600	20140715	73800	1
13	340465	4	Dallas	6	Loyalty NoSmart	20130702	634600	20130703	116000	1
14	340532	11	London	6	Loyalty NoSmart	20131210	1051600	20131217	698300	5
15	340539	11	London	2	Credit Smart	20140728	631300	20140730	444500	2
16	340615	3	Chicago	1	Debit Smart	20150318	501800	20150324	289800	4
17	340664	8	Toronto	4	Credit NoSmart	20130506	1229900	20130508	249000	2
18	340678	6	Los Angeles	6	Loyalty NoSmart	20150303	799300	20150316	799200	9

```sql
-- Q1-6
SELECT Job_id,Location_ID,Location_Name,Sales_class_id,sales_class_desc,Date_Ship_By,FirstShipDate,getBusDaysDiff(FirstShipDate,Date_Ship_By) AS DaysDiff
FROM (
    SELECT W_JOB_F.Job_id,W_JOB_F.Location_ID,Location_Name,W_JOB_F.Sales_class_id,sales_class_desc,Date_Ship_By,MIN(Actual_Ship_Date) AS FirstShipDate
    FROM W_JOB_F
    INNER JOIN W_LOCATION_D ON W_JOB_F.Location_id = W_LOCATION_D.Location_id
    INNER JOIN W_SALES_CLASS_D ON W_Job_F.Sales_Class_Id = W_Sales_Class_D.Sales_Class_Id
    INNER JOIN W_SUB_JOB_F ON W_Job_F.Job_Id = W_SUB_JOB_F.JOB_ID
    INNER JOIN W_JOB_SHIPMENT_F ON W_SUB_JOB_F.SUB_JOB_ID = W_JOB_SHIPMENT_F.SUB_JOB_ID
    GROUP BY W_JOB_F.Job_id,W_JOB_F.Location_ID,Location_Name,W_JOB_F.Sales_class_id,sales_class_desc,Date_Ship_By
) main
WHERE FirstShipDate > Date_Ship_By;
```

Data Output | Explain | Messages | Notifications

	job_id integer	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	date_ship_by integer	firstshipdate integer	daysdiff bigint
1	340006	2	Atlanta	6	Loyalty NoSmart	20130506	20130508	2
2	340025	12	Birmingham	3	Debit NoSmart	20130329	20130402	2
3	340057	8	Toronto	6	Loyalty NoSmart	20131121	20131205	10
4	340059	5	Denver	4	Credit NoSmart	20130611	20130613	2
5	340072	9	Montreal	6	Loyalty NoSmart	20130906	20130910	2
6	340129	3	Chicago	5	Prepaid NoSmart	20131029	20131031	2
7	340138	5	Denver	2	Credit Smart	20130913	20130918	3
8	340170	10	Vancouver	1	Debit Smart	20140714	20140717	3
9	340275	12	Birmingham	2	Credit Smart	20140102	20140106	2
10	340293	8	Toronto	5	Prepaid NoSmart	20140226	20140228	2
11	340294	12	Birmingham	5	Prepaid NoSmart	20130709	20130711	2
12	340328	8	Toronto	3	Debit NoSmart	20130617	20130619	2
13	340338	11	London	1	Debit Smart	20140408	20140410	2
14	340339	7	Seattle	4	Credit NoSmart	20140120	20140124	4
15	340342	10	Vancouver	3	Debit NoSmart	20150116	20150123	5
16	340408	6	Los Angeles	6	Loyalty NoSmart	20140225	20140227	2
17	340411	6	Los Angeles	5	Prepaid NoSmart	20130311	20130314	3
18	340415	11	London	6	Loyalty NoSmart	20130404	20130409	3
19	340424	7	Seattle	1	Debit Smart	20130625	20130627	2
20	340440	11	London	2	Credit Smart	20140707	20140709	2