



BRAINJACK

TIMECARD

USER'S GUIDE



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# 1 Introduction

BIF Technologies designs, develops, and deploys business intelligence (BI) solutions for our clients. We build these BI solutions using *BrainJack™*, our own business intelligence framework (BIF). BrainJack makes it relatively easy for our development teams to transform spreadsheets, CSV files, or data in relational databases into data entry forms, dashboards, pivot tables, scheduled reports, and alerts. We use BrainJack to make data meaningful.

This document provides guidance on using a BrainJack-based time and attendance solution - *BrainJack Time Card* (hereafter just Time Card). What is Time Card?

Time Card takes time and attendance data<sup>1</sup> and makes it available as dashboards, pivot tables, scheduled reports, alerts, and invoices.

Using Time Card your time and attendance data can be loaded into a relational database via a Java-based program written by BIF Technologies developers - *Time Card Data Loader*. Your invoices can be generated by *Time Card Invoice Generator*. In the pages that follow the reader is guided through installing Time Card, loading time and attendance data using Time Card Data Loader, and generating invoices using Time Card Invoice Generator.

This document was written for business users. That said, it does contain technical descriptions of tasks required for Time Card usage. In particular, this guide presents SQL statements for querying the Time Card database and maintaining metadata required for generating invoices. If you are not familiar with SQL do not fret. SQL is easy to learn; it was created for ad-hoc queries against databases. Also, there is an abundance of learning material out there:

SQL Tutorial <a href="https://www.w3schools.com/sql/">https://www.w3schools.com/sql/</a>
A Visual Introduction to SQL David Chappell and J. Harvey Trimble, Jr.
Learning SQL: Master SQL Fundamentals Alan Beaulieu
SQL for Business Intelligence Roderick L. Barnes, Sr.

*Table 3. Resources for Learning SQL*

If you have questions or feedback regarding the material found in this guide contact us at

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<sup>1</sup> BrainJack Time Card is virtually unlimited in the types of time and attendance data that it can load. To get the solution started BIF wrote data loading code capable of loading PayChex data into the BrainJack Time Card repository. Other viable sources include QuickBooks Time Sheets, ADP, and Gusto.

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Thank you for choosing BIF!

In His grip by His grace,  
Roderick L. Barnes, Sr.  
President and CEO  
BIF Technologies, Corp.

## 1.1 Software and Hardware Requirements

Loading time and attendance data into the Time Card repository is not complicated. The process involves getting the time and attendance file, preparing the data, and then loading it into the Time Card repository using Time Card Data Loader. Loading the data, because the software is Java-based, is operating system agnostic. You are free to use Windows, macOS, Linux, or Android for data loading. BIF recommends executing the processes that follow on a machine fitting the hardware and configuration profile shown below.

Machine Characteristic	Acceptable Value
Operating System	Windows
RAM	4 Gb+
Disk	64 Gb+
Java Installation	JDK 1.8+
Time Card Directory	C:\java\brainjack\timecard
Time Card Data Directory	C:\java\brainjack\timecard\data

*Table 4. Time Card Client Software and Hardware Requirements*

## 1.2 Timing is Everything

The procedures shown in the sections that follow should be fully executed by 9:00 AM every morning. This may become challenging on some days and there will likely be the temptation to just do it later. However, if the data is loaded too late it cannot be used for Time Card business intelligence. The data loading discipline is a non-negotiable requirement for the production of Time Card dashboards, pivot tables, alerts, scheduled reports, and invoices. Do what you can to make sure that Time Card data is loaded on time for your organization.

## 1.3 Check Your Work

Loading the data is a means to an end, a step in a process that produces time and attendance business intelligence, and a waypoint on a path to informed decision making. The inevitable result of regarding the waypoint as a destination is missing the mark. The data loading process is not done when Time Card Data Loader is finished uploading a data file. It is important that you check the outcome of a data load. Use the provided queries, dashboards, and pivot tables in this guide to validate data loads.

## 2 Installing Time Card

### 2.1 Client Installation

The Time Card client is a Java-based program for loading time and attendance data into the BrainJack Time Card database. As mentioned earlier, it runs on Windows, Linux, macOS, and Android. This guide will show you how to use it on Windows. To get started we are going to have to install it. The client can be downloaded from the BIF Technologies website:

```
http:\\biftechnologies.com\\brainjack\\timecard\\timecard.zip
```

Download this zipped file and unpack it into the directory below:

```
c:\\java\\brainjack\\timecard
```

You can open Windows Explorer and then launch the loader client or invoice generation client by running the files `TimeCardDataLoader.bat` or `TimeCardInvoiceGenerator.bat` respectively; these files are found in `c:\\java\\brainjack\\timecard`.

### 2.2 Database Schema Installation and Data Hosting

The timecard installation schema can be found in the archive `timecard.zip`. It is in the archive subdirectory `sql` and is called `timecard_oracle.sql`.

Anyone with a modest amount of experience installing Oracle will find the script straightforward and easy to modify. Use this script to setup the repository that will be used for hosting the solution.

If you are setting up Time Card to work with a repository other than the one provided by BIF Technologies you will use the script from above to make the database. At the time of this writing, the repository should be an Oracle 12c RDBMS or later. While it is possible to setup an Oracle Express instance on your own network, BIF recommends using an Oracle instance provided by a company that specializes in data hosting. (Even BIF does not host its own Time Card instance; we use Amazon AWS.) Why? That is, why should the data be hosted somewhere other than on your own network? The reasons are several.

- Reduced Maintenance - Databases are becoming better at self-management. However, installations and upgrades are not getting easier. Hosted environments enable you to deploy a fresh instance of the database server in less than five minutes. The work done by the hosting facility to provide an easy-to-manage database server frees you up to keep your focus on the mission of your organization.
- Increased Security - Your Time Card database should not be accessible for anything except RDBMS services. If it is... be concerned. The databases provided by hosting companies often do not provide interfaces for command line or GUI access. That means you cannot connect to the database server using Remote Desktop or SSH. You get an IP address, a port, and database login credentials. The operating system is off-limits.

Because of this (1) the attack surface is greatly reduced, (2) those who gain access are hard-pressed to install viruses, and (3) access to the RDBMS is easier to monitor.

- Scalability - Databases hosted on physical machines are less flexible than their virtualized counterparts. In hosted database services provided by modern cloud-based infrastructure vendors, the scalability of a machine can be adjusted at any time. Add more network bandwidth, memory, or CPUs with downtime of only a few minutes. It will cost more to add additional computing power or bandwidth. But so will doing it with a physical box that is in your building. The difference is that cost increases less with the increase of features in a hosted solution and the downtime for upgrades is orders of magnitude less.

A savvy do-it-yourself type will no doubt point out that the Oracle RDBMS could be installed on a minimally equipped machine using the absolutely free Oracle Express. To which we must say “What would have been gained through the frugality of such a hosting solution will be lost in sustainability, vulnerability, and the lack of scalability.” Prototype it in your own shop? Sure. Modern enterprise solution for your company? Nope.

So then, who can host your Time Card data? Glad you asked. In the table below we have provided some hosting options.

Amazon AWS <a href="https://aws.amazon.com/rds/oracle/">https://aws.amazon.com/rds/oracle/</a>
Azure <a href="https://azure.microsoft.com/en-us/solutions/oracle/">https://azure.microsoft.com/en-us/solutions/oracle/</a>
Oracle Corporation <a href="https://cloud.oracle.com/en_US/database">https://cloud.oracle.com/en_US/database</a>

*Table 5. Time Card Data Hosting Options*

In case you are wondering, we recommend Amazon AWS. It is robust and secure enough to be used by DoD for sensitive systems.



## 3 Loading Time and Attendance Data



### 3.1 The Data Loading Process

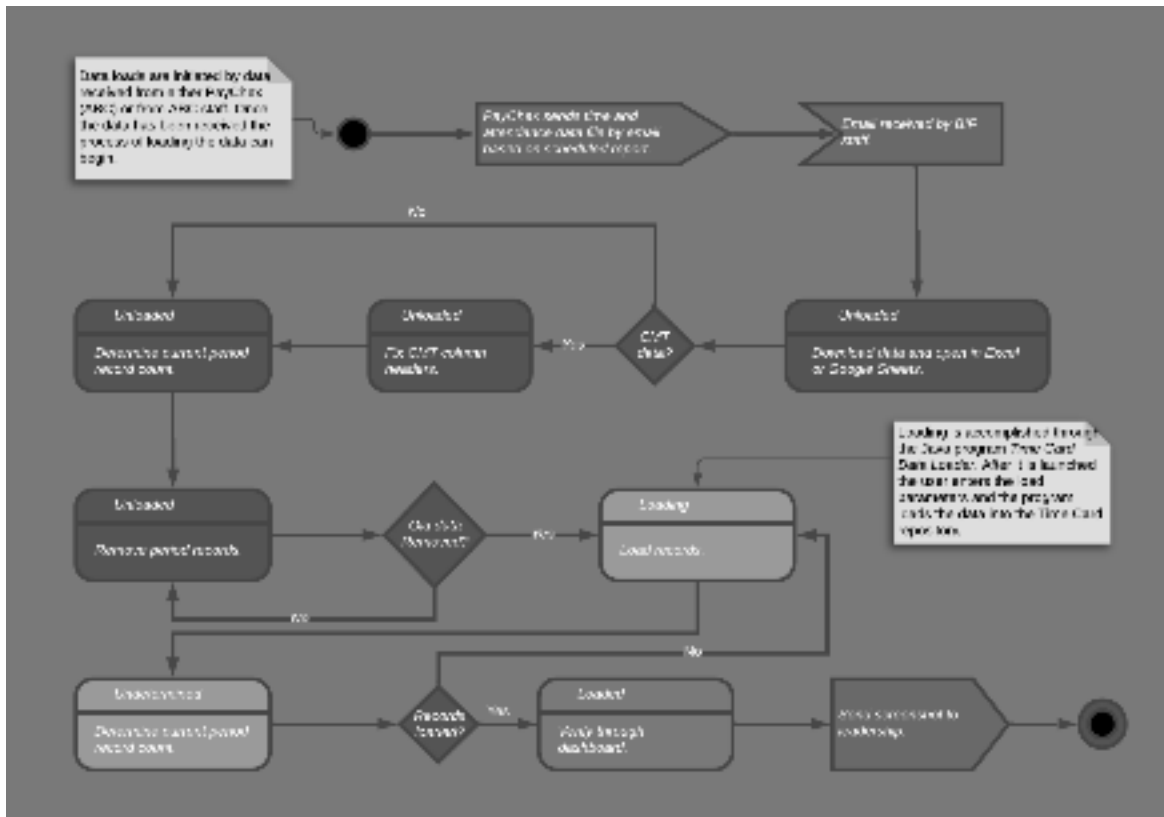


Figure 1. Data Load Process Diagram

### 3.2 Looking for the Time Card EMail

Your company (hereafter ABC, Corp. or just ABC) can many different system to get time and attendance data. QuickBooks and PayChex are viable data sources. (Paychex provides a solution for the capture and automated export of time and attendance data.) If you are using PayChex and you are on the distribution list the message will have a subject line of **Your Report Table Information is ready**; it will likely be from **no-reply@centralserver.com**. Attached to the email is a time and attendance spreadsheet.

### 3.3 Downloading the Excel Sheet

Download the sheet to a directory where all sheets will be kept. If you followed the installation instructions mentioned earlier that directory is `c:\java\brainjack\timecard\data`. The file naming convention for the sheets saved into the data directory is shown below

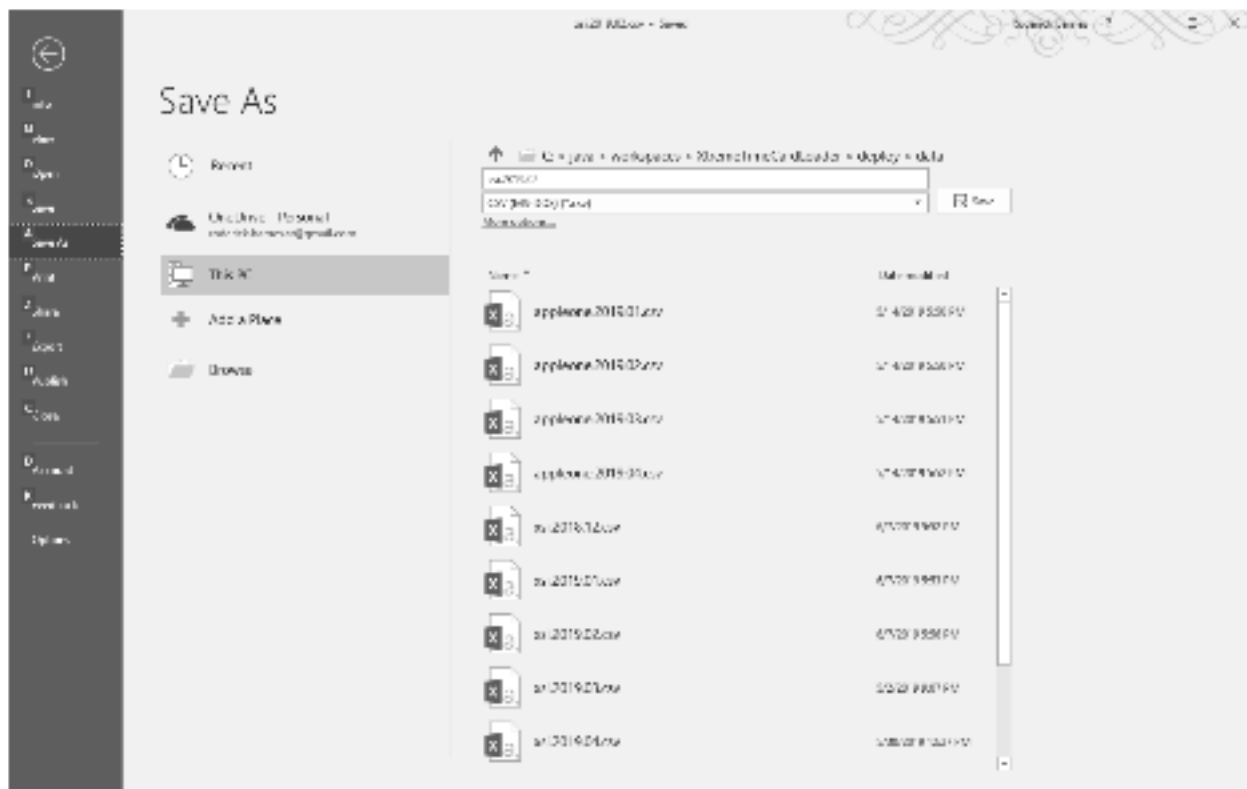
`company_id.year_of_data.month_of_data.xlsx`

For a May 2019 data file for ABC, Corp the file name would be

`abc.2019.05.xlsx`

### 3.4 Converting the Sheet to CSV

Open the sheet that was saved in the prior step using Microsoft Excel. We will now save the data in the CSV format. This format is required for loading the data into the Time Card repository. In the screenshot below the Save As option is shown:



*Figure 2. Saving to Time Card Sheet to CSV*

It is important that you use the “CSV (MS-DOS) (\*.csv)” option. The other CSV options may include characters that will not be properly processed by the loader.

### 3.5 Special Considerations and Interventions Required for CMT Data

Not all exports are created equal. CMT files have to be modified before they can be loaded by Time Card Data Loader. Why? CMT spreadsheets, as seen in Figure 3, contain two header rows. On the first header row we have the cells with the text Employee ID, User, Hours, Date, DOW, Task, etc; the text User is in a merged cell and will not be processed by the data loader. On the second header row we have Last Name and First Name in the cells that act as column headers for employee names.

1	A	B	C	D	E	F	G
1	Employee ID	User		Hours	Date	DOW	Task
2		Last Name	First Name				
3	760	Curry	Nycholle	8.00	5/1/2019	Wed	Regular Time
4	760	Curry	Nycholle	8.00	5/2/2019	Thu	Regular Time
5	760	Curry	Nycholle	8.00	5/3/2019	Fri	Regular Time
6	760	Curry	Nycholle	7.85	5/6/2019	Mon	Regular Time
7	760	Curry	Nycholle	7.87	5/7/2019	Tue	Regular Time
8	760	Curry	Nycholle	7.75	5/8/2019	Wed	Regular Time
9	760	Curry	Nycholle	4.00	5/9/2019	Thu	Unscheduled Sick
10	760	Curry	Nycholle	0.00	5/10/2019	Fri	Unscheduled Sick
11	760	Curry	Nycholle	8.00	5/13/2019	Mon	Regular Time
12	760	Curry	Nycholle	8.00	5/14/2019	Tue	Regular Time
13	760	Curry	Nycholle	8.00	5/15/2019	Wed	Regular Time
14	760	Curry	Nycholle	8.00	5/16/2019	Thu	Regular Time
15	760	Curry	Nycholle	8.00	5/17/2019	Fri	Regular Time

Figure 3. CMT Data File with Multi-Row Header Issue

Before CMT files are saved to a CSV format they will need to have the extra header row removed. The acceptable format is seen in the screenshot below.

1	A	B	C	D	E	F	G
1	Employee ID	Last Name	First Name	Hours	Date	DOW	Task
2	760	Curry	Nycholle	8.00	5/1/2019	Wed	Regular Time
3	760	Curry	Nycholle	8.00	5/2/2019	Thu	Regular Time
4	760	Curry	Nycholle	8.00	5/3/2019	Fri	Regular Time
5	760	Curry	Nycholle	7.85	5/6/2019	Mon	Regular Time
6	760	Curry	Nycholle	7.87	5/7/2019	Tue	Regular Time
7	760	Curry	Nycholle	7.75	5/8/2019	Wed	Regular Time
8	760	Curry	Nycholle	4.00	5/9/2019	Thu	Unscheduled Sick
9	760	Curry	Nycholle	0.00	5/10/2019	Fri	Unscheduled Sick
10	760	Curry	Nycholle	8.00	5/13/2019	Mon	Regular Time
11	760	Curry	Nycholle	8.00	5/14/2019	Tue	Regular Time
12	760	Curry	Nycholle	8.00	5/15/2019	Wed	Regular Time
13	760	Curry	Nycholle	8.00	5/16/2019	Thu	Regular Time
14	760	Curry	Nycholle	8.00	5/17/2019	Fri	Regular Time
15	760	Curry	Nycholle	8.00	5/20/2019	Mon	Regular Time

Figure 4. CMT Data File with Corrected Header

After you have successfully adjusted the CMT file you can save it as a CSV document and then load it using Time Card Data Loader.

### 3.6 Check the Time and Attendance Record Count for a Company and Billing Period

Before loading new data for a company and billing period you should do an assessment of the data that is already in the Time Card repository for that billing period. Specifically, you will want

to find out how many time and attendance records for the company and period are in the database prior to the data load. The query below will tell you how many time and attendance records are in the database for ABC in the billing period May 2019.<sup>2</sup>

```

1 SELECT
2     COUNT(*)
3 FROM
4     timecard.time_card_fact    tcf
5 WHERE
6     tcf.company_id             =      'ABC'
7 AND   TO_CHAR(tcf.event_date, 'yyyy.mm') = '2019.05';

```

*Table 6. SQL Query for Time and Attendance Record Count for a Company and Period*

At the time of this writing valid company identifiers can be added to Time Card through the table `timecard.company`.

### 3.7 Creating Billing Period Labor Categories

Records from a data file will not load if the labor category records (repository table `TIMECARD.LABOR_CATEGORY`) are not present. The `INSERT` statement below (lines 1 through 11) is used to create the labor category records for the billing period June 2019 using the records from May 2019. If there are changes in the rates or new labor categories you will have to get this data from the contract management staff and then enter it into the labor category table.

```

1 INSERT INTO timecard.labor_category lc
2 SELECT
3     '2019.06',
4     lc2.labor_category_id,
5     lc2.labor_category_name,
6     lc2.bill_rate,
7     lc2.non_profit_bill_rate
8 FROM
9     timecard.labor_category    lc2
10 WHERE
11     lc2.billing_period_id = '2019.05';
12 COMMIT;

```

*Table 7. SQL Statement for Creating Labor Categories*

You will not need to do this every time you load data. But it has to be done once before records for a billing period can be loaded.

### 3.8 Launch the Loader and Load Time and Attendance Data

The business of loading time and attendance data is finally at hand. If you have read this far through the guide you are ready to use Time Card Data Loader on your CSV data file. In the directory `c:\java\brainjack\timecard` there is a file named `TimeCardDataLoader.bat`. Using either the command line or Windows Explorer run the program.

---

<sup>2</sup> If you are using BrainJack to run this query the semicolon at the end (line 7) should be removed.

When it has opened you will be prompted for 7 values. Only two are necessary - *Company ID* and *Billing Period ID*. If the data files are put into the standard directory *Time Card Data File Path* can be derived from Company ID and Billing Period ID.

In the screenshot shown below a data file has been loaded for a company called CMT. The billing period identifier has been entered as 2019.07. The data file path was not entered; the program derived this value from the company identifier and the billing period identifier.

```

C:\java\workspaces\BrainJackTimeCard\deploy>java -splash:.\tcdl_splash.jpg -classpath .\lib\* cd
BrainJack Time Card Data Loader
ver 1.1.5, Copyright 2019
-----
Company ID: CMT
Billing Period ID: 2019.07
Time Card Data File Path:
    Using default: ./data/cmt.2019.07.csv
Aug 05, 2019 9:56:14 PM com.bif.timecard.loader.TimeCardDataLoader clearTimeCardRecords
INFO: Company ID: CMT
Aug 05, 2019 9:56:14 PM com.bif.timecard.loader.TimeCardDataLoader clearTimeCardRecords
INFO: Billing Period ID: 2019.07
Aug 05, 2019 9:56:14 PM com.bif.timecard.loader.TimeCardDataLoader clearTimeCardRecords
INFO: Clearing time card records...
Aug 05, 2019 9:56:14 PM com.bif.timecard.loader.TimeCardDataLoader clearTimeCardRecords
INFO: Records cleared: 228
Aug 05, 2019 9:56:16 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO: Saving time card records...
Aug 05, 2019 9:56:35 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO: Processed: 100 Records Loaded: 100 Complete: 43.29
Aug 05, 2019 9:56:51 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO:
    Billing period of time card record (2019.08) does not match data load (2019.07).
    Skipping record for Pray, Cheryl (Employee ID: 875, Event Date: 08/01/2019)
Aug 05, 2019 9:56:51 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO:
    Billing period of time card record (2019.08) does not match data load (2019.07).
    Skipping record for Pray, Cheryl (Employee ID: 875, Event Date: 08/02/2019)
Aug 05, 2019 9:56:55 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO: Processed: 200 Records Loaded: 200 Complete: 86.58
Aug 05, 2019 9:56:56 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO:
    Billing period of time card record (2019.08) does not match data load (2019.07).
    Skipping record for Quick, Casandra (Employee ID: 881, Event Date: 08/01/2019)
Aug 05, 2019 9:57:00 PM com.bif.timecard.loader.TimeCardDataLoader saveTimeCardRecords
INFO: Records created: 228
C:\java\workspaces\BrainJackTimeCard\deploy>

```

Figure 5. Screenshot for Time Card Data Loader

Use the table below to get a better understandin of the parameters expected by Time Card Data Loader.

Parameter Name	Description	Example
Company ID	This value needs to mach one of the identifiers in the table <code>TIMECARD.COMPANY</code> .	ABC
Billing Period ID	This the period for which the hours are being loaded. The value entered should be	2019.05



	in the format yyyy.mm. For a billing period in July the billing period ID would be 2019.07.	
Time Card Data File Path	This is the path to your CSV file. Although a full path is acceptable, because the program is running from the Time Card installation directory, you can enter a relative path.	./data/abc.2019.05.csv

Table 8. Time Card Data Loader Parameters

### 3.9 Confirm Time Card Data Load with the Time Card Dashboard

If the data was loaded successfully you should be able to find it in the dashboard. This will require launching the dashboard and entering parameters that enable you to see the new data in dashboard visualizations.

BrainJack Time Card Dashboard URL:

<https://brainjack.works/DashboardViewer.html?dashboardID=F3F7F4B9-FDA2-4F63-AA00-D3B7E2C0FB7B>

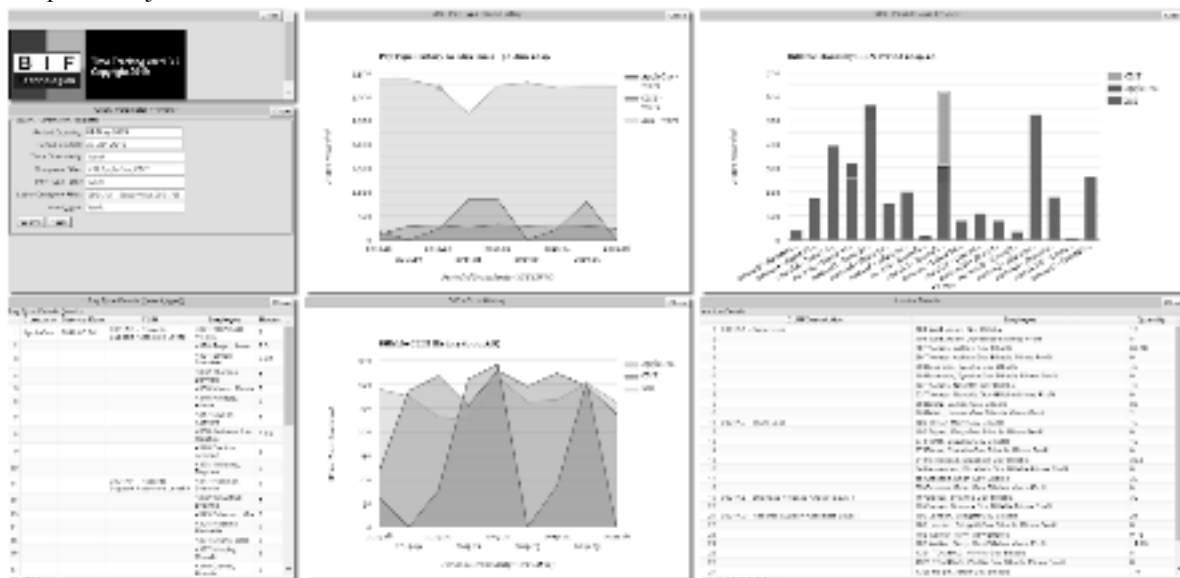


Figure 6. Time Card Dashboard

## 4 Generating A Time Card Invoice



Time Card provides its user with dashboards, pivot tables, scheduled reports, and alerts. Additionally, it enables users to generate an invoice for your customers. This section of the administration guide will explain invoice generation.

### 4.1 The Invoice Generation Process

The invoice generation process is the most complicated part of Time Card. In order to successfully create an invoice a significant amount of preparation must be done. In the diagram below we depict the process at a high level.

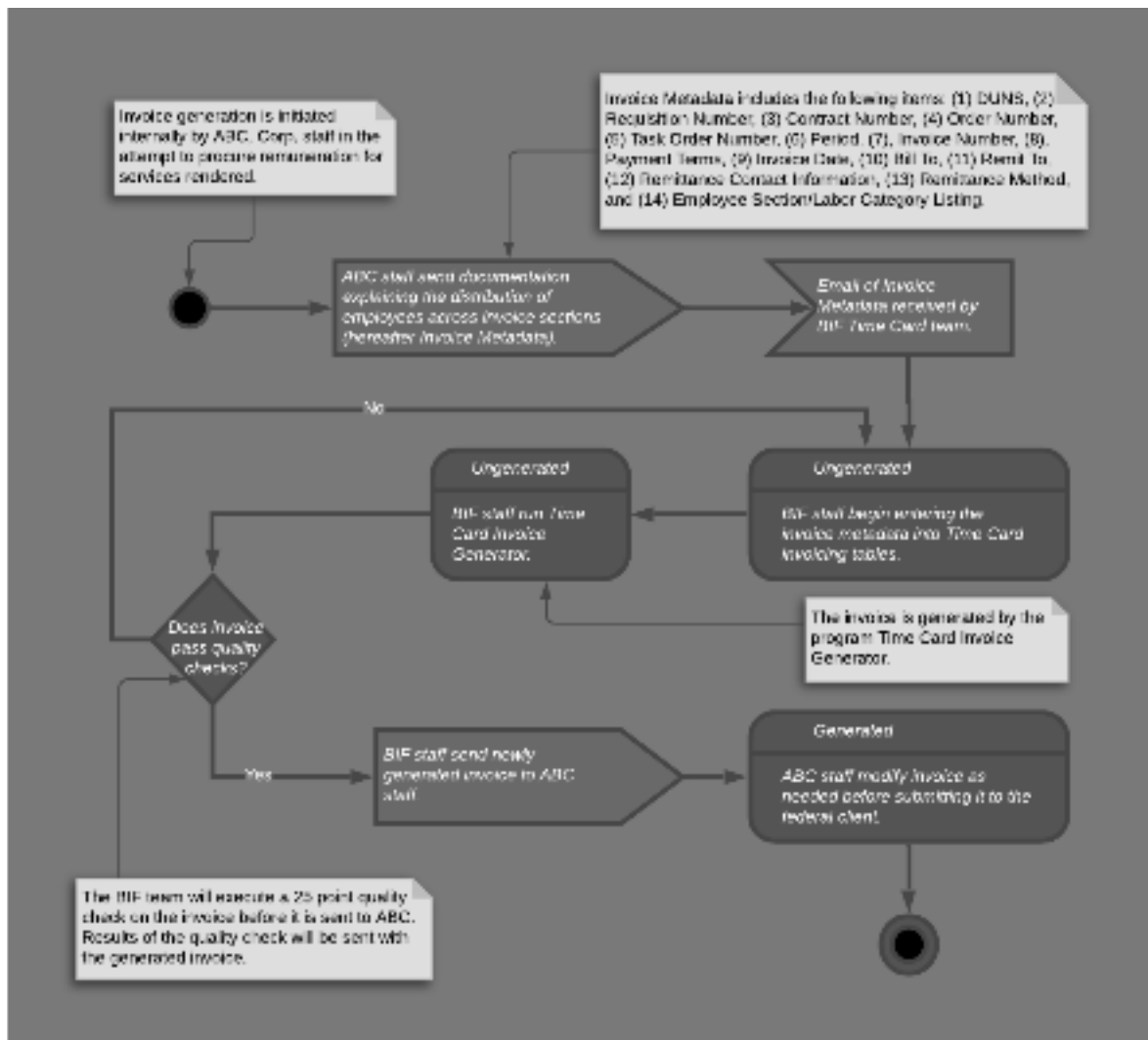


Figure 7. Time Card Invoice Generation Process Diagram

## 4.2 Setting Up Invoice Metadata

Time Card was designed with invoicing in mind. In fact, one of the chief goals when it was being written was to make sure that it would be flexible in generating invoices for your clients. There are a number of things that can be configured with Time Card invoice:

- Invoice Section Count - The count of sections in your invoice is dynamic. You can have a section for every organization within the client that is being billed for services.
- Section Names - The names of the sections in your invoice are dynamic. Once you have entered the section names into the Time Card database the Invoice Generator will generate an invoice with the correct number of sections and names that match your entries.
- Employees Per Section - You can decide which employees are in which section of the invoice. You will also be able to determine what labor categories are associated with each employee.

Each of these things can be configured through the entry of *metadata*. What is metadata? It is data about the invoice - DUNS, Invoice Number, section names, employee labor categories, employee names, etc. Once the metadata has been loaded the invoice can be generated as a Microsoft Excel spreadsheet.

To help bring all of this home let us consider a scenario. Let us say that your company, ABC Corp., provides contract labor to a large federal agency. That agency has four organizations or departments receiving contract labor from ABC:

- HQ Sections
- Legal Sections
- Regional Offices
- Technical Ops Sections

If we are going to generate an invoice that contains a section for each of these departments we are going to have to enter the metadata.

### 4.2.1 Entering Invoice Section Metadata

You will need to ensure that there are `INVOICE_SECTION` records in the Time Card database for each department that was served. When you are entering a new billing period, say July 2019, you will need to create records in the `INVOICE_SECTION` table for HQ Sections, Legal Sections, Regional Offices and Technical Ops Sections.

Worksheet | Query Builder

```
1 SELECT
2 *
3 FROM
4 timecard.invoice_section tis
5 WHERE
6 tis.billing_period_id = '2019.07';
```

Query Result X

SQL | All Rows Fetched: 4 in 0.049 seconds

	BILLING_PERIOD_ID	INVOICE_SECTION_ID	CAPTION
1	2019.07	HQ Sections	HQ Sections
2	2019.07	Legal Sections	Legal Sections
3	2019.07	Regional Offices	Regional Offices
4	2019.07	Technical Ops Sections	Technical Ops Sections

Figure 8. Invoice Section Records for a Billing Period

The records can be created in the database using SQL Developer or any other data editing tool of your choice. If you understand SQL it will be a simple matter to insert the records. If you are not familiar with the SQL required to insert or update the invoice section records do not worry. It can be done using SQL Developer without actually using any SQL.

Once the invoice section records have been created for the billing period you will need to add the employee section data. In each billing period there will be section records for each department that is being billed. In each section there is one record for each labor category of each employee.<sup>3</sup>

ABC Corp. Employee Invoice Section Metadata Table: <code>TIMECARD.EMPLOYEE_INVOICE_SECTION</code>					
Billing Period	Invoice Section	Labor Category	Employee ID	Last Name <sup>4</sup>	First Name
2019.07	HQ Sections	0001AS - Administrative Support	101	Tyson	Cicily
		0001AS - Administrative Support	103	Cooper	Bradley
		0001EL - Equalizer	18	Washington	Denzel
	Legal Sections	0001AS - Administrative Support	105	Banderas	Antonio
		0001EL - Warrant Procurement	25	Cruise	Tom
		0001CS - Clerical Support	27	Duval	Robert
	Regional Offices	0001AS - Administrative Support	18	Washington	Denzel
		0001PC - Pest Control	81	Mendes	Eva
	Technical Ops Sections	0001SD - Software Development	104	Anderson	Thomas
		0001CN - SQL Server	92	Olmos	Edward

<sup>3</sup> An employee can serve in a billing period under more than one category and under more than one department. Notice that Denzel Washington has served in two different departments (HQ Sections and Regional Offices) with two different labor categories (0001EL - Equalizer and 0001AS - Administrative Support).

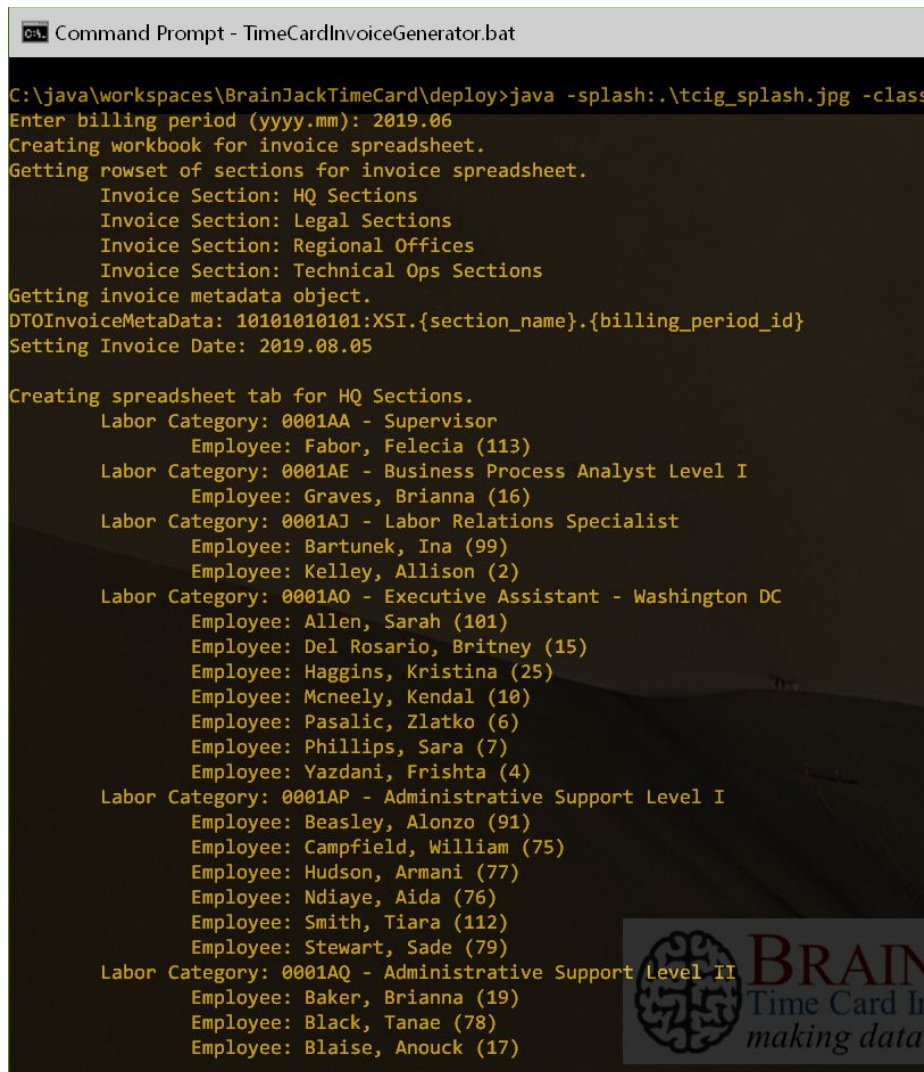
<sup>4</sup> Last name and first name are not actually in the table `TIMECARD.EMPLOYEE_INVOICE_SECTION`. These columns are shown here to make the table easier to understand.

Table 9. Employee Invoice Sections Metadata

Invoice generation cannot begin until this information has been entered into the Time Card repository. (Ideally this information is entered long before it is time to produce an invoice.)

### 4.3 Using the Time Card client for Invoice Generation

Time Card Invoice Generator is launched in a way that is similar to Time Card Data Loader; `TimeCardInvoiceGenerator.bat` is the launch file. Once started it will prompt the user for the invoice period. After the period has been entered the invoice will be generated and sent to a file with a name based on the period. E.g., if the period entered was `2019.06` the file generated would be `2019.06.invoice.xlsx`.



```
Command Prompt - TimeCardInvoiceGenerator.bat

C:\java\workspaces\BrainJackTimeCard\deploy>java -splash:.\tcig_splash.jpg -class
Enter billing period (yyyy.mm): 2019.06
Creating workbook for invoice spreadsheet.
Getting rowset of sections for invoice spreadsheet.
    Invoice Section: HQ Sections
    Invoice Section: Legal Sections
    Invoice Section: Regional Offices
    Invoice Section: Technical Ops Sections
Getting invoice metadata object.
DTOInvoiceMetaData: 101010101:XSI.{section_name}.{billing_period_id}
Setting Invoice Date: 2019.08.05

Creating spreadsheet tab for HQ Sections.
    Labor Category: 0001AA - Supervisor
        Employee: Faber, Felecia (113)
    Labor Category: 0001AE - Business Process Analyst Level I
        Employee: Graves, Brianna (16)
    Labor Category: 0001AJ - Labor Relations Specialist
        Employee: Bartunek, Ina (99)
        Employee: Kelley, Allison (2)
    Labor Category: 0001AO - Executive Assistant - Washington DC
        Employee: Allen, Sarah (101)
        Employee: Del Rosario, Britney (15)
        Employee: Haggins, Kristina (25)
        Employee: Mcneely, Kendal (10)
        Employee: Pasalic, Zlatko (6)
        Employee: Phillips, Sara (7)
        Employee: Yazdani, Frishta (4)
    Labor Category: 0001AP - Administrative Support Level I
        Employee: Beasley, Alonzo (91)
        Employee: Campfield, William (75)
        Employee: Hudson, Armani (77)
        Employee: Ndiaye, Aida (76)
        Employee: Smith, Tiara (112)
        Employee: Stewart, Sade (79)
    Labor Category: 0001AQ - Administrative Support Level II
        Employee: Baker, Brianna (19)
        Employee: Black, Tanae (78)
        Employee: Blaise, Anouck (17)
```

Figure 9. Screenshot for Time Card Invoice Generator



# 5 Time Card Business Intelligence

## 5.1 Dashboards

Time Card dashboards provide executive leadership, management, and select clients with at-a-glance summaries and details of time and attendance data. There are two dashboards included with Time Card: (1) Time Tracker and (2) Time and Attendance Investigator. The first provides a big picture view of the time and attendance hours for a project across select companies and labor categories.

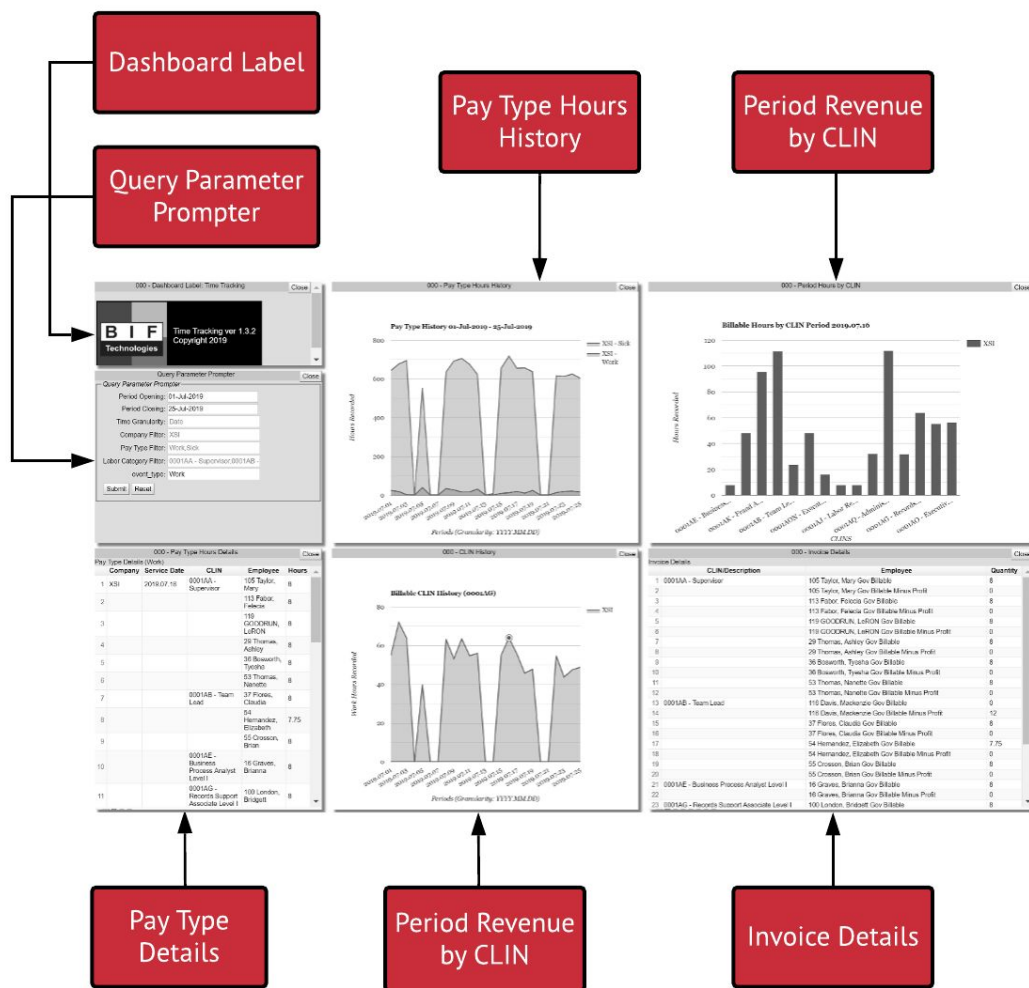


Figure 10. Time Tracking Dashboard Breakdown

Dashboard Component	Description
Dashboard Label	Displays information about the dashboard product.
Query Parameter Prompter	Allows the user to input filters for time tracking data. Currently the Time

Tracking dashboard supports filtering by company, event type (work, vacation, holiday, military leave, etc.), date range, and labor category.

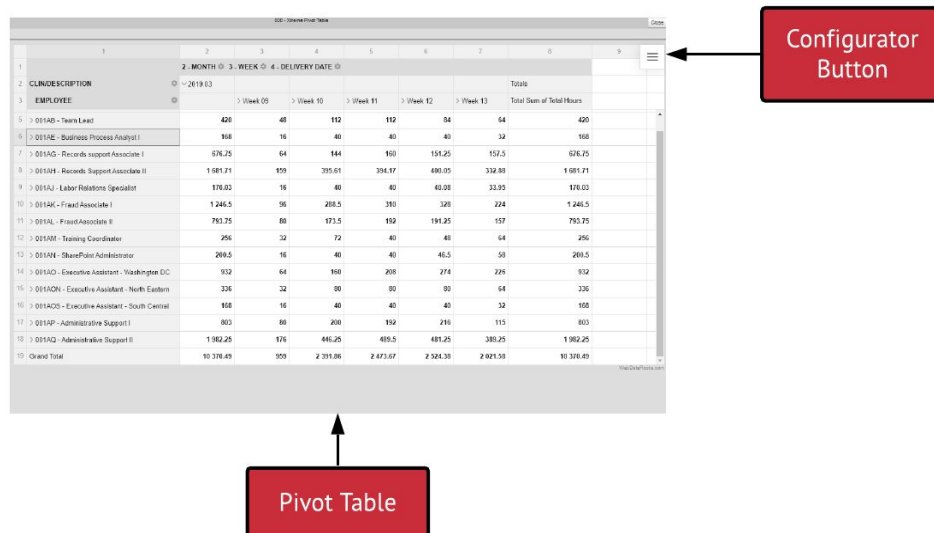
Pay Type Hours History	Displays an aggregate of reported hours for the selected pay types over a certain time interval.
Period Revenue by CLIN	Displays the total number of hours recorded for the selected period grouped by CLIN.
Pay Type Details	Lists the pay type details for the selected CLIN and time interval.
Period Revenue by CLIN	Displays an aggregate of reported hours for a selected CLIN over a certain time interval.
Invoice Details	Lists the invoice details for the selected CLIN and time interval.

*Table 10. Description of Time Tracking Dashboard components*

The second dashboards facilitates getting answers to questions about employee hours. Use this dashboard to efficiently get to the details of what time has been recorded by a particular set of employees.

## 5.2 Pivot Tables

Time Card includes one pivot table - *Revenue Pivot*. Using this pivot table the user can investigate correlations between labor categories, companies, time periods, and revenue. This is a general purpose tool for answering questions that do not come out of standard reports.



*Figure 11. Time and Attendance Investigator Dashboard Breakdown*

Dashboard Component	Description
Configurator Button	Allows for configuration of rows, columns, and filters for the pivot table.
Pivot Table	Provides a multidimensional summary of time and attendance data.

*Table 11. Description of Time and Attendance Investigator Dashboard Components*

## 5.3 ActiveBI

Time Card includes one ActiveBI-based report - *Unreported Employee Hours*. This is a scheduled report showing those employees that have not turned in hours for the last business day.

## 5.4 Invoices

The invoice generation module of Time Card produces a highly customized invoice. See *4 Generating A Time Card Invoice* in this guide.

## 6 Appendices

### 6.1 Time Card Application Settings

Setting ID	Name	Description
logo_url	Logo URL	This is the logo of the URL displayed in dashboards.
company_display_name	Company Display Name	This is the name of the company that will be displayed in dashboards.

*Table 12. BrainJack Time Card Configuration Parameters*

### 6.2 Time Card Data File Specification

BrainJack Time Card can load a company's time entry data directly from PayChex, QuickBooks, or from a data file provided by the company.<sup>5</sup> The data file provided by a company can be processed only if the data file is *BrainJack Time Card Compliant*. That is, the data file must (1) have the correct columns, (2) be in the correct order, and (3) have column data in the correct format. In the table below required ordering, required columns, ordering, descriptions, and example values are provided. Use this table to plan your company's time card data file export.

Position	Column Name	Description	Example Value
1	Employee ID	Character - Unique identifier for an employee. This value must be unique within the company.	007
2	First Name	Character - The first name of the employee.	Denzel
3	Last Name	Character - The last name of the employee.	Washington
4	Apply To Date	Date - The date on which the time card event occurred. Format: MM/DD/YYYY	07/23/2019
5	Pay Type	Character - Valid values are <ul style="list-style-type: none"><li>• Bereavement</li><li>• Break</li><li>• Holiday</li><li>• Jury Duty</li><li>• Meal</li><li>• Military Leave</li><li>• Sick</li><li>• Unpaid Time</li><li>• Vacation</li><li>• Weather Government Closure</li></ul>	Work

---

<sup>5</sup> Loading data from PayChex and QuickBooks will not be released until 2019 Q3. This feature will leverage BrainJack Stargate technology to make it possible to read time entry data from these external systems as if it were in a database.

		<ul style="list-style-type: none"> <li>• Work Weather Closure</li> <li>• Work</li> </ul>	
6	Regular Duration	Number - Number of hours that are considered standard. This value should always be a number.	4.25
7	Unpaid Duration	Number - Hours for which there will be no pay. E.g., Break, Meal, and Unpaid Time. This value should always be a number.	0.75
8	Total Paid Duration	Number - The total amount of time for which the customer will be invoiced. This value should always be a number.	4.25
9	Level 1 Code	Character - The project code.	TOS
10	Level 1 Name	Character - The name of the project.	The Original Series
11	Level 2 Code	Character - The labor category code.	0001AL
12	Level 2 Name	Character - The name of the labor category.	Fraud Associate Level II
13	Level 3 Code	Character - The department code. This is the organization or department where the services were performed.	00BRGE
14	Level 3 Name	Character - The name of the department.	Bridge

Table 13. BrainJack Time Card Data File Specification

## 6.3 Time Card Supplemental Queries

If you are comfortable using SQL it is possible to get answers from BrainJack Time Card that are not provided by the stock dashboards, pivot table, alerts, and invoice. In the sections that follow are a few **SELECT** statements used by the development team are made available to you for investigating time and attendance issue. If the SQL in the queries seems to complex consider our book *SQL for Business Intelligence*; it is a quick read and will help you make sense of our queries.

### 6.3.1 Unreported Hours Employee List

This first query is the most complex one in the appendix. If you are just learning SQL skip it. Go to the remaining queries; they are easier to understand and will help you formulate your own.

```

WITH
  FUNCTION get_offset RETURN NUMBER IS
    number_offset  NUMBER      := 1;
    varchar_weekday VARCHAR(20) := TO_CHAR(SYSDATE, 'Day');
  BEGIN
    IF (varchar_weekday = 'Monday') THEN
      number_offset := 3;
    ELSIF (varchar_weekday = 'Sunday') THEN
      number_offset := 2;
    ELSE
      number_offset := 1;
    END IF;

    RETURN number_offset;
  END;
  FUNCTION get_last_report_date(varchar_employee_id IN VARCHAR) RETURN VARCHAR IS
    varchar_last_report_date VARCHAR(20) := TO_CHAR(SYSDATE, 'yyyy.mm.dd');
    number_offset            NUMBER      := get_offset();

```



```

        CURSOR cursor_last_report_date(varchar_employee_id IN VARCHAR) IS
        SELECT
            MAX(tcf.event_date) AS event_date
        FROM
            timecard.time_card_fact tcf
        WHERE
            tcf.employee_id = varchar_employee_id
            AND TO_CHAR(tcf.event_date,'yyyy.mm.dd') <= TO_CHAR(SYSDATE - number_offset,'yyyy.mm.dd')
            AND tcf.event_type = 'Work';
    BEGIN
        FOR record_last_report_date IN cursor_last_report_date(varchar_employee_id) LOOP
            varchar_last_report_date := TO_CHAR(record_last_report_date.event_date,'yyyy.mm.dd');
        END LOOP;

        RETURN varchar_last_report_date;
    END;

    virtual_employee_table AS (
        SELECT
            DISTINCT
            tcf.employee_id,
            tcf.last_name || ', ' || tcf.first_name AS employee_name
        FROM
            timecard.time_card_fact tcf
        WHERE
            tcf.employee_id NOT IN (
                44,30,96,63,8,82,23,27,85,62,93,41,60,71,52
            )
    )

    SELECT
        vet.employee_id AS "Employee ID",
        vet.employee_name AS "Employee Name",
        get_last_report_date(vet.employee_id) AS "Last Report Date"
    FROM
        virtual_employee_table vet
    WHERE
        vet.employee_id NOT IN (
            SELECT
                DISTINCT
                tcf.employee_id
            FROM
                timecard.time_card_fact tcf
            WHERE
                TO_CHAR(tcf.event_date,'yyyy.mm.dd') = TO_CHAR(SYSDATE - get_offset(),'yyyy.mm.dd')
                AND tcf.event_type = 'Work'
        )
    ORDER BY
        get_last_report_date(vet.employee_id) DESC,
        vet.employee_name

```

*Table 14. SQL Query Used to Produce Unreported Hours Scheduled Report*

### 6.3.2 Time Card Record Count by Company

1	SELECT		
2		tcf.company_id	AS "Company",
3		COUNT(*)	AS "Record Count"
4	FROM		
5		timecard.time_card_fact	tcf
6	GROUP BY		

```

7      tcf.company_id
8 ORDER BY
9      tcf.company_id;

```

*Table 15. SQL Query for the Total Count of Records by Company*

### 6.3.3 Time Card Record Count by Company by Month

```

1 SELECT
2     tcf.company_id AS "Company",
3     TO_CHAR(tcf.event_date, 'yyyy.mm') AS "Billing Period",
4     COUNT(*) AS "Record Count"
5 FROM
6     timecard.time_card_fact tcf
7 GROUP BY
8     tcf.company_id,
9     TO_CHAR(tcf.event_date, 'yyyy.mm')
10 ORDER BY
11     tcf.company_id,
12     TO_CHAR(tcf.event_date, 'yyyy.mm');

```

*Table 16. SQL Query for the Total Count of Records by Company by Month*

### 6.3.4 Time Card Record Count by Company by Month by Event Type

```

1 SELECT
2     tcf.company_id AS "Company",
3     TO_CHAR(tcf.event_date, 'yyyy.mm') AS "Billing Period",
4     tcf.event_type AS "Pay Type",
5     COUNT(*) AS "Record Count"
6 FROM
7     timecard.time_card_fact tcf
8 GROUP BY
9     tcf.company_id,
10    TO_CHAR(tcf.event_date, 'yyyy.mm'),
11    tcf.event_type
12 ORDER BY
13     tcf.company_id,
14     TO_CHAR(tcf.event_date, 'yyyy.mm'),
15     tcf.event_type;

```

*Table 17. SQL Query for the Total Count of Records by Company by Month by Event Type*