What is GTFS?

A General Transit Feed Specification (GTFS) feed is composed of a series of text files compiled in a ZIP file. Each file models a particular aspect of transit information: stops, routes, trips, and other schedule data. A transit agency can produce a GTFS feed to share their public transit information with developers, who write tools that consume GTFS feeds to incorporate public transit information into their applications. GTFS can be used for trip planning, publishing time tables, and informing a variety of applications. Further details about the series of text files and information contained in them are provided in the tables to follow.

Group Exercises

Group 1

Your supervisor has asked you to learn more about GTFS with the potential goal of adding your organization's **transit data** into a shared transportation application like Google Transit. Since you are not familiar with this standard, you did some preliminary research on what GTFS is and the requirements for use. Your supervisor wants a brief but detailed workflow for adding transit data into a Google Transit application. For the purpose of this exercise, focus on the first six (required) items in **Table A** (additional detail on the specific items can be found in Tables B-G) and **develop a workflow** for completing the task. In the workflow you may want to address topics such as:

- Data sources
- Data collection methods
- Staff responsibilities
- Data update/maintenance
- Data end-users
- Inter-agency collaboration

Resource: Google has provided a very brief workflow of the entire process. Refer to the workflow via the following link: http://maps.google.com/help/maps/mapcontent/transit/participate.html

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Group 2

Your supervisor has asked you to learn more about GTFS with the potential goal of adding your organization's **bike/ped data** into a shared transportation application like Google Transit. Since you are not familiar with this standard, you did some preliminary research on what GTFS is and the requirements for use. Your supervisor wants a brief but detailed workflow for adding bike/ped data into a Google Transit application. For the purpose of this exercise, focus on the first six (required) items in **Table A** (additional detail on the specific items can be found in Tables B-G) and **develop a workflow** for completing the task. In the workflow you may want to address topics such as:

- Data sources
- Data collection methods
- Staff responsibilities
- Data update/maintenance
- Data end-users
- Inter-agency collaboration

Resource: Google has provided a very brief workflow of the entire process. Refer to the workflow via the following link: http://maps.google.com/help/maps/mapcontent/transit/participate.html

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Table A: Feed Files

FILENAME	REQUIRED	DEFINES
AGENCY.TXT	Required	One or more transit agencies that provide the data in this feed.
STOPS.TXT	Required	Individual locations where vehicles pick up or drop off passengers.
ROUTES.TXT	Required	Transit routes. A route is a group of trips that are displayed to riders as a single service.
TRIPS.TXT	Required	Trips for each route. A trip is a sequence of two or more stops that occurs at specific time.
STOP_TIMES.TXT	Required	Times that a vehicle arrives at and departs from individual stops for each trip.
CALENDAR.TXT	Required	Dates for service IDs using a weekly schedule. Specify when service starts and ends, as well as days of the week where service is available.
CALENDAR_DATES.TXT	Optional	Exceptions for the service IDs defined in the calendar.txt file. If calendar_dates.txt includes ALL dates of service, this file may be specified instead of calendar.txt.
FARE_ATTRIBUTES.TXT	Optional	Fare information for a transit organization's routes.
FARE_RULES.TXT	Optional	Rules for applying fare information for a transit organization's routes.
SHAPES.TXT	Optional	Rules for drawing lines on a map to represent a transit organization's routes.
FREQUENCIES.TXT	Optional	Headway (time between trips) for routes with variable frequency of service.
TRANSFERS.TXT	Optional	Rules for making connections at transfer points between routes.
FEED_INFO.TXT	Optional	Additional information about the feed itself, including publisher, version, and expiration information.

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Table B: Agency.txt File

FIELD NAME	REQUIRED	DETAILS
AGENCY_ID	Optional	The **agency_id** field is an ID that uniquely identifies a transit agency. A transit feed may represent data from more than one agency. The **agency_id** is dataset unique. This field is optional for transit feeds that only contain data for a single agency.
AGENCY_NAME	Required	The **agency_name** field contains the full name of the transit agency. Google Maps will display this name.
AGENCY_URL	Required	The **agency_url** field contains the URL of the transit agency. The value must be a fully qualified URL that includes **http://** or **https://**, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommentations.html for a description of how to create fully qualified URL values.
AGENCY_TIMEZONE	Required	The **agency_timezone** field contains the timezone where the transit agency is located. Timezone names never contain the space character but may contain an underscore. Please refer to http://en.wikipedia.org/wiki/List_of_tz_zones for a list of valid values. If multiple agencies are specified in the feed, each must have the same **agency_timezone**.
AGENCY_LANG	Optional	The **agency_lang** field contains a two-letter ISO 639-1 code for the primary language used by this transit agency. The language code is case-insensitive (both en and EN are accepted). This setting defines capitalization rules and other language-specific settings for all text contained in this transit agency's feed. Please refer to http://www.loc.gov/standards/iso639-2/php/code_list.php for a list of valid values.
AGENCY_PHONE	Optional	The **agency_phone** field contains a single voice telephone number for the specified agency. This field is a string value that presents the telephone number as typical for the agency's service area. It can and should contain punctuation marks to group the digits of the number. Dialable text (for example, TriMet's "503-238-RIDE") is permitted, but the field must not contain any other descriptive text.
AGENCY_FARE_URL	Optional	The **agency_fare_url** specifies the URL of a web page that allows a rider to purchase tickets or other fare instruments for that agency online. The value must be a fully qualified URL that includes **http://** or **https://**, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommentations.html for a description of how to create fully qualified URL values.

Table C: Stops.txt

FIELD NAME	REQUIRED	DETAILS
STOP_ID	Required	The **stop_id** field contains an ID that uniquely identifies a stop or station. Multiple routes may use the same stop. The **stop_id** is dataset unique.
STOP_CODE	Optional	The **stop_code** field contains short text or a number that uniquely identifies the stop for passengers. Stop codes are often used in phone-based transit information systems or printed on stop signage to make it easier for riders to get a stop schedule or real-time arrival information for a particular stop. The stop_code field should only be used for stop codes that are displayed to passengers. For internal codes, use **stop_id**. This field should be left blank for stops without a code.
STOP_NAME	Required	The **stop_name** field contains the name of a stop or station. Please use a name that people will understand in the local and tourist vernacular.
STOP_DESC	Optional	The **stop_desc** field contains a description of a stop. Please provide useful, quality information. Do not simply duplicate the name of the stop.
STOP_LAT	Required	The **stop_lat** field contains the latitude of a stop or station. The field value must be a valid WGS 84 latitude.
STOP_LON	Required	The **stop_lon** field contains the longitude of a stop or station. The field value must be a valid WGS 84 longitude value from -180 to 180.
ZONE_ID	Optional	The **zone_id** field defines the fare zone for a stop ID. Zone IDs are required if you want to provide fare information using fare_rules.txt. If this stop ID represents a station, the zone ID is ignored.
STOP_URL	Optional	The **stop_url** field contains the URL of a web page about a particular stop. This should be different from the **agency_url** and the **route_url** fields. The value must be a fully qualified URL that includes **http://** or **https://**, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommentations.html for a description of how to create fully qualified URL values.
LOCATION_TYPE	Optional	The **location_type** field identifies whether this stop ID represents a stop or station. If no location type is specified, or the location_type is blank, stop IDs are treated as

<table>
<tr><td></td><td></td><td>stops. Stations may have different properties from stops when they are represented on a map or used in trip planning.

The location type field can have the following values:

• 0 or blank - Stop. A location where passengers board or disembark from a transit vehicle.
• 1 - Station. A physical structure or area that contains one or more stop.</td></tr>
<tr><td>PARENT_STATION</td><td>Optional</td><td>For stops that are physically located inside stations, the parent_station field identifies the station associated with the stop. To use this field, stops.txt must also contain a row where this stop ID is assigned location type=1.

<table>
<tr><th>This stop ID represents...</th><th>This entry's location type...</th><th>This entry's parent_station field contains...</th></tr>
<tr><td>A stop located inside a station.</td><td>0 or blank</td><td>The stop ID of the station where this stop is located. The stop referenced by parent_station must have location_type=1.</td></tr>
<tr><td>A stop located outside a station.</td><td>0 or blank</td><td>A blank value. The parent_station field doesn't apply to this stop.</td></tr>
<tr><td>A station.</td><td>1</td><td>A blank value. Stations can't contain other stations.</td></tr>
</table></td></tr>
<tr><td>STOP_TIMEZONE</td><td>Optional</td><td>The stop_timezone field contains the timezone in which this stop or station is located. Please refer to Wikipedia List of Timezones for a list of valid values. If omitted, the stop should be assumed to be located in the timezone specified by agency_timezone in agency.txt.

When a stop has a parent station, the stop is considered to be in the timezone specified by the parent station's stop_timezone value. If the parent has no</td></tr>
</table>

		stop_timezone value, the stops that belong to that station are assumed to be in the timezone specified by **agency_timezone**, even if the stops have their own **stop_timezone** values. In other words, if a given stop has a **parent_station** value, any **stop_timezone** value specified for that stop must be ignored. Even if **stop_timezone** values are provided in stops.txt, the times in stop_times.txt should continue to be specified as time since midnight in the timezone specified by **agency_timezone** in agency.txt. This ensures that the time values in a trip always increase over the course of a trip, regardless of which timezones the trip crosses.
WHEELCHAIR_BOARDING	Optional	The **wheelchair_boarding** field identifies whether wheelchair boardings are possible from the specified stop or station. The field can have the following values: • **0** (or empty) - indicates that there is no accessibility information for the stop • **1** - indicates that at least some vehicles at this stop can be boarded by a rider in a wheelchair • **2** - wheelchair boarding is not possible at this stop When a stop is part of a larger station complex, as indicated by a stop with a **parent_station** value, the stop's **wheelchair_boarding** field has the following additional semantics: • **0** (or empty) - the stop will inherit its **wheelchair_boarding** value from the parent station, if specified in the parent • **1** - there exists some accessible path from outside the station to the specific stop / platform • **2** - there exists no accessible path from outside the station to the specific stop / platform

Table D: Routes.Txt

FIELD NAME	REQUIRED	DETAILS
ROUTE_ID	Required	The **route_id** field contains an ID that uniquely identifies a route. The **route_id** is dataset unique.
AGENCY_ID	Optional	The **agency_id** field defines an agency for the specified route. This value is referenced from the agency.txt file. Use this field when you are providing data for routes from more than one agency.
ROUTE_SHORT_NAME	Required	The **route_short_name** contains the short name of a route. This will often be a short, abstract identifier like "32", "100X", or "Green" that riders use to identify a route, but which doesn't give any indication of what places the route serves. At least one of **route_short_name** or **route_long_name** must be specified, or potentially both if appropriate. If the route does not have a short name, please specify a **route_long_name** and use an empty string as the value for this field. See a Google Maps screenshot highlighting the **route_short_name**.
ROUTE_LONG_NAME	Required	The **route_long_name** contains the full name of a route. This name is generally more descriptive than the **route_short_name** and will often include the route's destination or stop. At least one of **route_short_name** or **route_long_name** must be specified, or potentially both if appropriate. If the route does not have a long name, please specify a **route_short_name** and use an empty string as the value for this field. See a Google Maps screenshot highlighting the **route_long_name**.
ROUTE_DESC	Optional	The **route_desc** field contains a description of a route. Please provide useful, quality information. Do not simply duplicate the name of the route. For example, "A trains operate between Inwood-207 St, Manhattan and Far Rockaway-Mott Avenue, Queens at all times. Also from about 6AM until about midnight, additional A trains operate between Inwood-207 St and Lefferts Boulevard (trains typically alternate between Lefferts Blvd and Far Rockaway)."
ROUTE_TYPE	Required	The **route_type** field describes the type of transportation used on a route. Valid values for this field are: • **0** - Tram, Streetcar, Light rail. Any light rail or street level system within a metropolitan area.

		• **1** - Subway, Metro. Any underground rail system within a metropolitan area. • **2** - Rail. Used for intercity or long-distance travel. • **3** - Bus. Used for short- and long-distance bus routes. • **4** - Ferry. Used for short- and long-distance boat service. • **5** - Cable car. Used for street-level cable cars where the cable runs beneath the car. • **6** - Gondola, Suspended cable car. Typically used for aerial cable cars where the car is suspended from the cable. • **7** - Funicular. Any rail system designed for steep inclines. See a Google Maps screenshot highlighting the **route_type**.
ROUTE_URL	Optional	The **route_url** field contains the URL of a web page about that particular route. This should be different from the **agency_url**. The value must be a fully qualified URL that includes **http://** or **https://**, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommentations.html for a description of how to create fully qualified URL values.
ROUTE_COLOR	Optional	In systems that have colors assigned to routes, the **route_color** field defines a color that corresponds to a route. The color must be provided as a six-character hexadecimal number, for example, 00FFFF. If no color is specified, the default route color is white (FFFFFF).The color difference between **route_color** and **route_text_color** should provide sufficient contrast when viewed on a black and white screen. The W3C Techniques for Accessibility Evaluation And Repair Tools document offers a useful algorithm for evaluating color contrast. There are also helpful online tools for choosing contrasting colors, including the snook.ca Color Contrast Check application.
ROUTE_TEXT_COLOR	Optional	The **route_text_color** field can be used to specify a legible color to use for text drawn against a background of **route_color**. The color must be provided as a six-character hexadecimal number, for example, FFD700. If no color is specified, the default text color is black (000000). The color difference between **route_color** and **route_text_color** should provide sufficient contrast when viewed on a black and white screen.

Table E: Trips.Txt

FIELD NAME	REQUIRED	DETAILS
ROUTE_ID	Required	The **route_id** field contains an ID that uniquely identifies a route. This value is referenced from the routes.txt file.
SERVICE_ID	Required	The **service_id** contains an ID that uniquely identifies a set of dates when service is available for one or more routes. This value is referenced from the calendar.txt or calendar_dates.txt file.
TRIP_ID	Required	The **trip_id** field contains an ID that identifies a trip. The **trip_id** is dataset unique.
TRIP_HEADSIGN	Optional	The **trip_headsign** field contains the text that appears on a sign that identifies the trip's destination to passengers. Use this field to distinguish between different patterns of service in the same route. If the headsign changes during a trip, you can override the **trip_headsign** by specifying values for the the stop_headsign field in stop_times.txt. See a Google Maps screenshot highlighting the **headsign**.
TRIP_SHORT_NAME	Optional	The **trip_short_name** field contains the text that appears in schedules and sign boards to identify the trip to passengers, for example, to identify train numbers for commuter rail trips. If riders do not commonly rely on trip names, please leave this field blank. A **trip_short_name** value, if provided, should uniquely identify a trip within a service day; it should not be used for destination names or limited/express designations.
DIRECTION_ID	Optional	The **direction_id** field contains a binary value that indicates the direction of travel for a trip. Use this field to distinguish between bi-directional trips with the same route_id. This field is not used in routing; it provides a way to separate trips by direction when publishing time tables. You can specify names for each direction with the **trip_headsign** field. • **0** - travel in one direction (e.g. outbound travel) • **1** - travel in the opposite direction (e.g. inbound travel) For example, you could use the trip_headsign and direction_id fields together to assign a name to travel in each direction for a set of trips. A trips.txt file could contain these rows for use in time tables:

		trip_id,...,trip_headsign,direction_id 1234,...,to Airport,0 1505,...,to Downtown,1
BLOCK_ID	Optional	The **block_id** field identifies the block to which the trip belongs. A block consists of two or more sequential trips made using the same vehicle, where a passenger can transfer from one trip to the next just by staying in the vehicle. The **block_id** must be referenced by two or more trips in trips.txt.
SHAPE_ID	Optional	The **shape_id** field contains an ID that defines a shape for the trip. This value is referenced from the shapes.txt file. The shapes.txt file allows you to define how a line should be drawn on the map to represent a trip.
WHEELCHAIR_ACCESSIBLE	Optional	• **0** (or empty) - indicates that there is no accessibility information for the trip • **1** - indicates that the vehicle being used on this particular trip can accommodate at least one rider in a wheelchair • **2** - indicates that no riders in wheelchairs can be accommodated on this trip
BIKES_ALLOWED	Optional	• **0** (or empty) - indicates that there is no bike information for the trip • **1** - indicates that the vehicle being used on this particular trip can accommodate at least one bicycle • **2** - indicates that no bicycles are allowed on this trip

Table F: Stop_Time. Txt

FIELD NAME	REQUIRED	DETAILS
TRIP_ID	Required	The **trip_id** field contains an ID that identifies a trip. This value is referenced from the trips.txt file.
ARRIVAL_TIME	Required	The **arrival_time** specifies the arrival time at a specific stop for a specific trip on a route. The time is measured from "noon minus 12h" (effectively midnight, except for days on which daylight savings time changes occur) at the beginning of the service date. For times occurring after midnight on the service date, enter the time as a value greater than 24:00:00 in HH:MM:SS local time for the day on which the trip schedule begins. If you don't have separate times for arrival and departure at a stop, enter the same value for **arrival_time** and **departure_time**. If this stop isn't a time point, use an empty string value for the **arrival_time** and **departure_time** fields. Stops without arrival times will be scheduled based on the nearest preceding timed stop. To ensure accurate routing, please provide arrival and departure times for all stops that are time points. Do not interpolate stops. You must specify arrival and departure times for the first and last stops in a trip. Times must be eight digits in HH:MM:SS format (H:MM:SS is also accepted, if the hour begins with 0). Do not pad times with spaces. The following columns list stop times for a trip and the proper way to express those times in the **arrival_time** field: **Time** — **arrival_time value** 08:10:00 A.M. — 08:10:00 or 8:10:00 01:05:00 P.M. — 13:05:00 07:40:00 P.M. — 19:40:00 01:55:00 A.M. — 25:55:00 **Note:** Trips that span multiple dates will have stop times greater than **24:00:00**. For example, if a trip begins at 10:30:00 p.m. and ends at 2:15:00 a.m. on the following day, the stop times would be **22:30:00** and **26:15:00**. Entering those stop times as **22:30:00** and **02:15:00** would not produce the desired results.

DEPARTURE_TIME	Required	The **departure_time** specifies the departure time from a specific stop for a specific trip on a route. The time is measured from "noon minus 12h" (effectively midnight, except for days on which daylight savings time changes occur) at the beginning of the service date. For times occurring after midnight on the service date, enter the time as a value greater than 24:00:00 in HH:MM:SS local time for the day on which the trip schedule begins. If you don't have separate times for arrival and departure at a stop, enter the same value for **arrival_time** and **departure_time**. If this stop isn't a time point, use an empty string value for the **arrival_time** and **departure_time** fields. Stops without arrival times will be scheduled based on the nearest preceding timed stop. To ensure accurate routing, please provide arrival and departure times for all stops that are time points. Do not interpolate stops. You must specify arrival and departure times for the first and last stops in a trip. Times must be eight digits in HH:MM:SS format (H:MM:SS is also accepted, if the hour begins with 0). Do not pad times with spaces. The following columns list stop times for a trip and the proper way to express those times in the **departure_time** field: **Time** — **departure_time value** 08:10:00 A.M. — 08:10:00 or 8:10:00 01:05:00 P.M. — 13:05:00 07:40:00 P.M. — 19:40:00 01:55:00 A.M. — 25:55:00 **Note:** Trips that span multiple dates will have stop times greater than **24:00:00**. For example, if a trip begins at 10:30:00 p.m. and ends at 2:15:00 a.m. on the following day, the stop times would be **22:30:00** and **26:15:00**. Entering those stop times as **22:30:00** and **02:15:00** would not produce the desired results.
STOP_ID	Required	The **stop_id** field contains an ID that uniquely identifies a stop. Multiple routes may use the same stop. The stop_id is referenced from the stops.txt file. If location_type is used in stops.txt, all stops referenced in stop_times.txt must have location_type of 0.

		Where possible, **stop_id** values should remain consistent between feed updates. In other words, stop A with **stop_id 1** should have **stop_id 1** in all subsequent data updates. If a stop is not a time point, enter blank values for **arrival_time** and **departure_time**.
STOP_SEQUENCE	Required	The **stop_sequence** field identifies the order of the stops for a particular trip. The values for **stop_sequence** must be non-negative integers, and they must increase along the trip. For example, the first stop on the trip could have a **stop_sequence** of **1**, the second stop on the trip could have a **stop_sequence** of **23**, the third stop could have a **stop_sequence** of **40**, and so on.
STOP_HEADSIGN	Optional	The **stop_headsign** field contains the text that appears on a sign that identifies the trip's destination to passengers. Use this field to override the default trip_headsign when the headsign changes between stops. If this headsign is associated with an entire trip, use trip_headsign instead. See a Google Maps screenshot highlighting the **headsign**.
PICKUP_TYPE	Optional	The **pickup_type** field indicates whether passengers are picked up at a stop as part of the normal schedule or whether a pickup at the stop is not available. This field also allows the transit agency to indicate that passengers must call the agency or notify the driver to arrange a pickup at a particular stop. Valid values for this field are: • **0** - Regularly scheduled pickup • **1** - No pickup available • **2** - Must phone agency to arrange pickup • **3** - Must coordinate with driver to arrange pickup The default value for this field is **0**.
DROP_OFF_TYPE	Optional	The **drop_off_type** field indicates whether passengers are dropped off at a stop as part of the normal schedule or whether a drop off at the stop is not available. This field also allows the transit agency to indicate that passengers must call the agency or notify the driver to arrange a drop off at a particular stop. Valid values for this field are: • **0** - Regularly scheduled drop off • **1** - No drop off available • **2** - Must phone agency to arrange drop off • **3** - Must coordinate with driver to arrange drop off

		The default value for this field is **0**.
SHAPE_DIST_TRAVELED	Optional	When used in the stop_times.txt file, the **shape_dist_traveled** field positions a stop as a distance from the first shape point. The **shape_dist_traveled** field represents a real distance traveled along the route in units such as feet or kilometers. For example, if a bus travels a distance of 5.25 kilometers from the start of the shape to the stop, the **shape_dist_traveled** for the stop ID would be entered as "5.25". This information allows the trip planner to determine how much of the shape to draw when showing part of a trip on the map. The values used for **shape_dist_traveled** must increase along with **stop_sequence**: they cannot be used to show reverse travel along a route. The units used for **shape_dist_traveled** in the stop_times.txt file must match the units that are used for this field in the shapes.txt file.
TIMEPOINT	Optional	The **timepoint** field can be used to indicate if the specified arrival and departure times for a stop are strictly adhered to by the transit vehicle or if they are instead approximate and/or interpolated times. The field allows a GTFS producer to provide interpolated stop times that potentially incorporate local knowledge, but still indicate if the times are approximate. For stop-time entries with specified arrival and departure times, valid values for this field are: • **empty** - Times are considered exact. • **0** - Times are considered approximate. • **1** - Times are considered exact. For stop-time entries without specified arrival and departure times, feed consumers must interpolate arrival and departure times. Feed producers may optionally indicate that such an entry is not a timepoint (value=0) but it is an error to mark a entry as a timepoint (value=1) without specifying arrival and departure times.

Table G: Calendar.Txt

FIELD NAME	REQUIRED	DETAILS
SERVICE_ID	Required	The **service_id** contains an ID that uniquely identifies a set of dates when service is available for one or more routes. Each service_id value can appear at most once in a calendar.txt file. This value is dataset unique. It is referenced by the trips.txt file.
MONDAY	Required	The **monday** field contains a binary value that indicates whether the service is valid for all Mondays. • A value of **1** indicates that service is available for all Mondays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Mondays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.
TUESDAY	Required	The **tuesday** field contains a binary value that indicates whether the service is valid for all Tuesdays. • A value of **1** indicates that service is available for all Tuesdays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Tuesdays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.
WEDNESDAY	Required	The **wednesday** field contains a binary value that indicates whether the service is valid for all Wednesdays. • A value of **1** indicates that service is available for all Wednesdays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Wednesdays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.
THURSDAY	Required	The **thursday** field contains a binary value that indicates whether the service is valid for all Thursdays. • A value of **1** indicates that service is available for all Thursdays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Thursdays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.

FRIDAY	Required	The **friday** field contains a binary value that indicates whether the service is valid for all Fridays. • A value of **1** indicates that service is available for all Fridays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Fridays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file
SATURDAY	Required	The **saturday** field contains a binary value that indicates whether the service is valid for all Saturdays. • A value of **1** indicates that service is available for all Saturdays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Saturdays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.
SUNDAY	Required	The **sunday** field contains a binary value that indicates whether the service is valid for all Sundays. • A value of **1** indicates that service is available for all Sundays in the date range. (The date range is specified using the **start_date** and **end_date** fields.) • A value of **0** indicates that service is not available on Sundays in the date range. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.
START_DATE	Required	The **start_date** field contains the start date for the service. The **start_date** field's value should be in YYYYMMDD format.
END_DATE	Required	The **end_date** field contains the end date for the service. This date is included in the service interval. The **end_date** field's value should be in YYYYMMDD format.