

Payments Team Coding Challenge

Overview

Here at **Vimeo**, we use a tier-based subscription pricing model.

Everyone who signs up gets access to a free tier called **Basic**. Users who need a higher tier of service can purchase a subscription. Our available tiers from lowest to highest are **Plus**, **Pro**, and **Premium**. All are available as monthly or yearly plans. Yearly plans offer discounts for users willing to make longer commitments.

A user can experience any of these events: **Sign Up**, **Upgrade**, **Renew**, **Downgrade**, and **Expire**.

Your task is to use the available data to determine which events happened and write them to a file.

Events Explained

Sign Up events happen the day users are created. They always start on the Basic tier.

Upgrade events happen the day users purchase a higher tier or a longer plan than their current.

For example, a Basic user purchasing a Plus plan is upgrading. A monthly user purchasing a yearly plan is also upgrading.

When upgrading from Basic, the purchase day becomes their billing day, which determines all future due dates.

For example, when a Basic user upgrades on `9/15/2021`, their billing day becomes the `15th`

After any upgrade, their due date is calculated using the billing day, for the above example:

- On a monthly plan, their next due date would be `10/15/2021`
- On a yearly plan, their next due date would be `9/15/2022`

Renew events happen when users re-purchase their current plan on their due date.

After a renewal, their due date is re-calculated.

For example, when a user renews a monthly plan on `10/15/2021`, their next due date becomes `11/15/2021`.

Downgrade events happen after users purchase a lower-tier or shorter plan than their current.

While the purchase can occur anytime, the Downgrade event does not happen until their next due date.

For example, when a user with a `10/15/2021` due date purchases a lower tier on `10/10/2021`, the downgrade event does not happen until their due date, `10/15/2021`.

After a downgrade, their due date is re-calculated.

Expire events happen when a due date passes without another purchase being made.

After expiring, users revert to Basic.

Input Files

`users.csv` is a CSV formatted file containing User data, one row per User. You should only need the following columns:

Column	Description
ID	ID of this User
Created On	Date that this User signed up

`purchases.csv` is a CSV formatted file containing Purchase data, one row per Purchase, with the following columns:

Column	Description
ID	ID of this Purchase
User ID	ID of the User who made this Purchase
Date	Date this Purchase was made
Amount	Amount of money that was spent
Plan ID	ID of Plan that was purchased, all listed below

Plans IDs

Plan Tier	Monthly Plan IDs	Yearly Plan IDs
Basic	0	0
Plus	75448	75449
Pro	35385	35386
Premium	16317	16318

Expected Output

Your output should be a CSV formatted file named `user-events.csv` with the following columns:

Column	Description
user_id	ID of the User this event happened to
date	Date this event happened
event	<code>Sign Up</code> , <code>Upgrade</code> , <code>Renew</code> , <code>Downgrade</code> , or <code>Expire</code>
plan_id	User's Plan ID after this event happened

Example

Take a moment to review the data for `user_id=1` in both input files. Their final output would be:

user_id	date	event	plan_id
1	2021-01-05	Sign Up	0
1	2021-01-15	Upgrade	35385
1	2021-02-15	Renew	35385
1	2021-03-15	Downgrade	75448
1	2021-04-15	Expire	0

First, they Sign Up on `2021-01-05` .

Then, they Upgrade to Plus on `2021-01-15` by purchasing `Pro Monthly` .

- Because they upgraded from Basic, their billing day becomes the `15th`
- The purchased plan is monthly, so their next due date is a month later, on `2021-02-15`
- If it had been a yearly plan, their next due date would have been a year later, on `2022-01-15`

Then, they Renew by re-purchasing their current tier on their due date, `2021-02-15`

- Their next due date becomes `2021-03-15`

Then, they purchase a lower tier, `Plus Monthly` , on `2021-03-10` , but do not Downgrade until their due date, on `2021-03-15` .

- Their next due date becomes `2021-04-15`

Finally, they Expire on their next due date, `2021-04-15` , when it passes without them making a purchase.