Objective

The goal of this analysis is to understand the demographic and usage patterns of Netflix users, calculate key metrics such as Lifetime Value (LTV), and provide insights based on various attributes such as age, country, device usage, and subscription types.

Data

The dataset contains the following columns:

• **User ID**: A unique identifier for each user.

• **Subscription Type**: The type of subscription plan (Basic, Standard, Premium).

• **Monthly Revenue**: The monthly revenue generated from each user.

• **Join Date**: The date the user joined Netflix.

• **Last Payment Date**: The date of the last payment made by the user.

• **Country**: The country of the user.

• **Age**: The age of the user.

• **Gender**: The gender of the user.

• **Device**: The primary device used by the user (Smartphone, Tablet, Smart TV, Laptop).

• **Plan Duration**: The duration of the subscription plan.

Importing Libraries

In [26]:
```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import math
```

Importing Dataset

In [2]:
```
df = pd.read_csv('Netflix Userbase.csv')
```

In [3]:
```
df.head()
```

Out[3]:

	User ID	Subscription Type	Monthly Revenue	Join Date	Last Payment Date	Country	Age	Gender	Device	Plan Duration
0	1	Basic	10	15-01-22	10-06-23	United States	28	Male	Smartphone	1 Month
1	2	Premium	15	05-09-21	22-06-23	Canada	35	Female	Tablet	1 Month
2	3	Standard	12	28-02-23	27-06-23	United Kingdom	42	Male	Smart TV	1 Month
3	4	Standard	12	10-07-22	26-06-23	Australia	51	Female	Laptop	1 Month
4	5	Basic	10	01-05-23	28-06-23	Germany	33	Male	Smartphone	1 Month

In [4]:
```
# Checking the duplicates

df.duplicated().sum()
```

Out[4]:
```
0
```

In [5]:
```
# Checkinh the null values

df.isnull().sum()
```

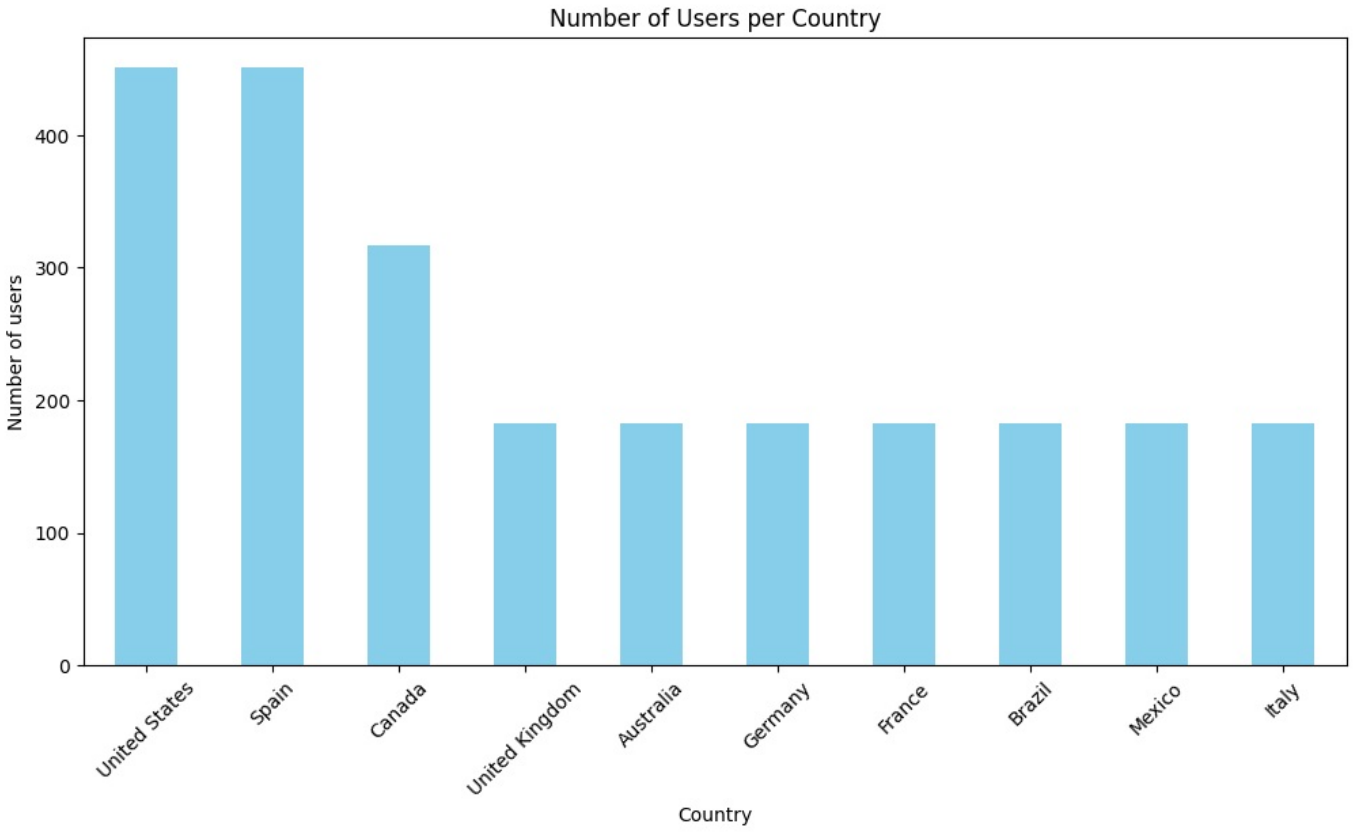
Out[5]:
```
User ID              0
Subscription Type    0
Monthly Revenue      0
Join Date            0
Last Payment Date    0
Country              0
Age                  0
Gender               0
Device               0
Plan Duration        0
dtype: int64
```

In [6]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2500 entries, 0 to 2499
Data columns (total 10 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   User ID            2500 non-null   int64
 1   Subscription Type  2500 non-null   object
 2   Monthly Revenue    2500 non-null   int64
 3   Join Date          2500 non-null   object
 4   Last Payment Date  2500 non-null   object
 5   Country            2500 non-null   object
 6   Age                2500 non-null   int64
 7   Gender             2500 non-null   object
 8   Device             2500 non-null   object
 9   Plan Duration      2500 non-null   object
dtypes: int64(3), object(7)
memory usage: 195.4+ KB
```

Finding Number of users per Country

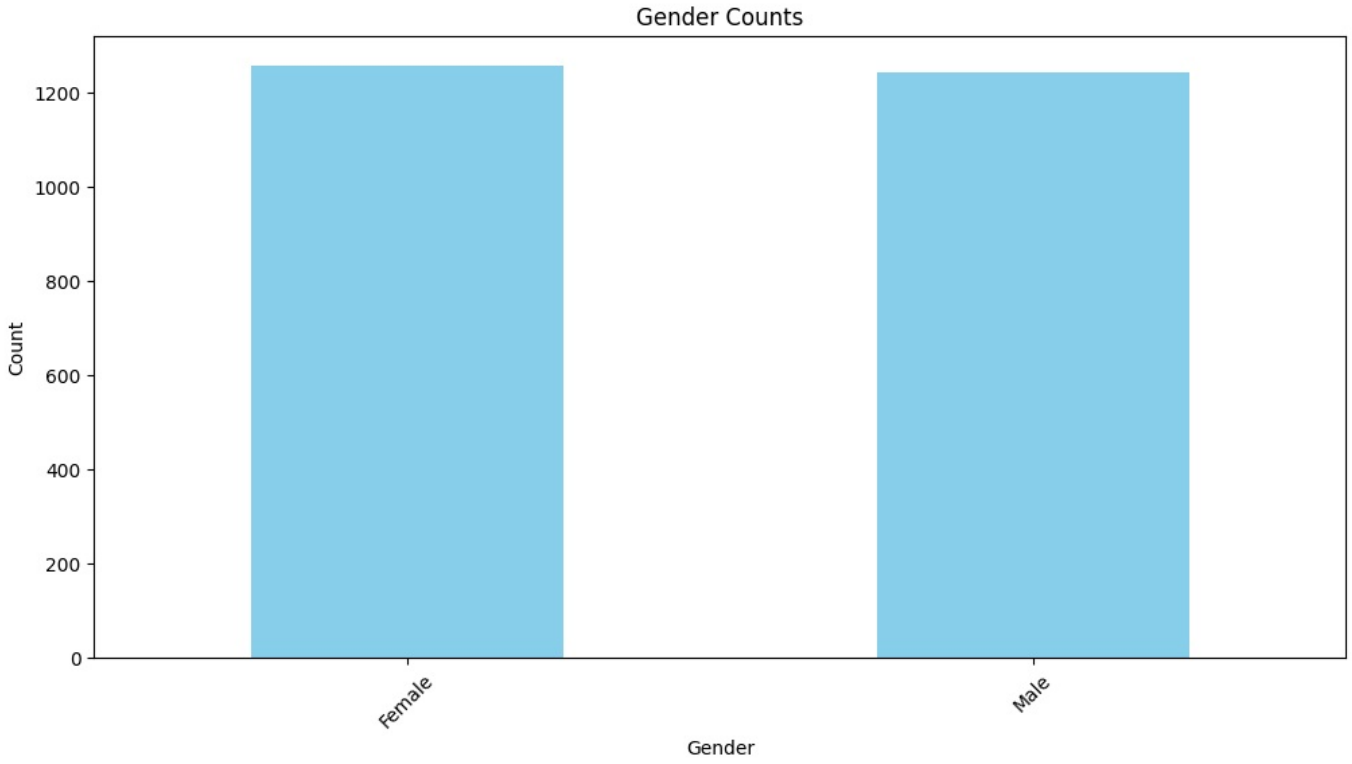
In [7]:
```
# Bar Chart

plt.figure(figsize=(12,6))
df['Country'].value_counts().plot(kind='bar' , color='skyblue')
plt.title('Number of Users per Country')
plt.xlabel('Country')
plt.ylabel('Number of users')
plt.xticks(rotation=45)
plt.show()
```

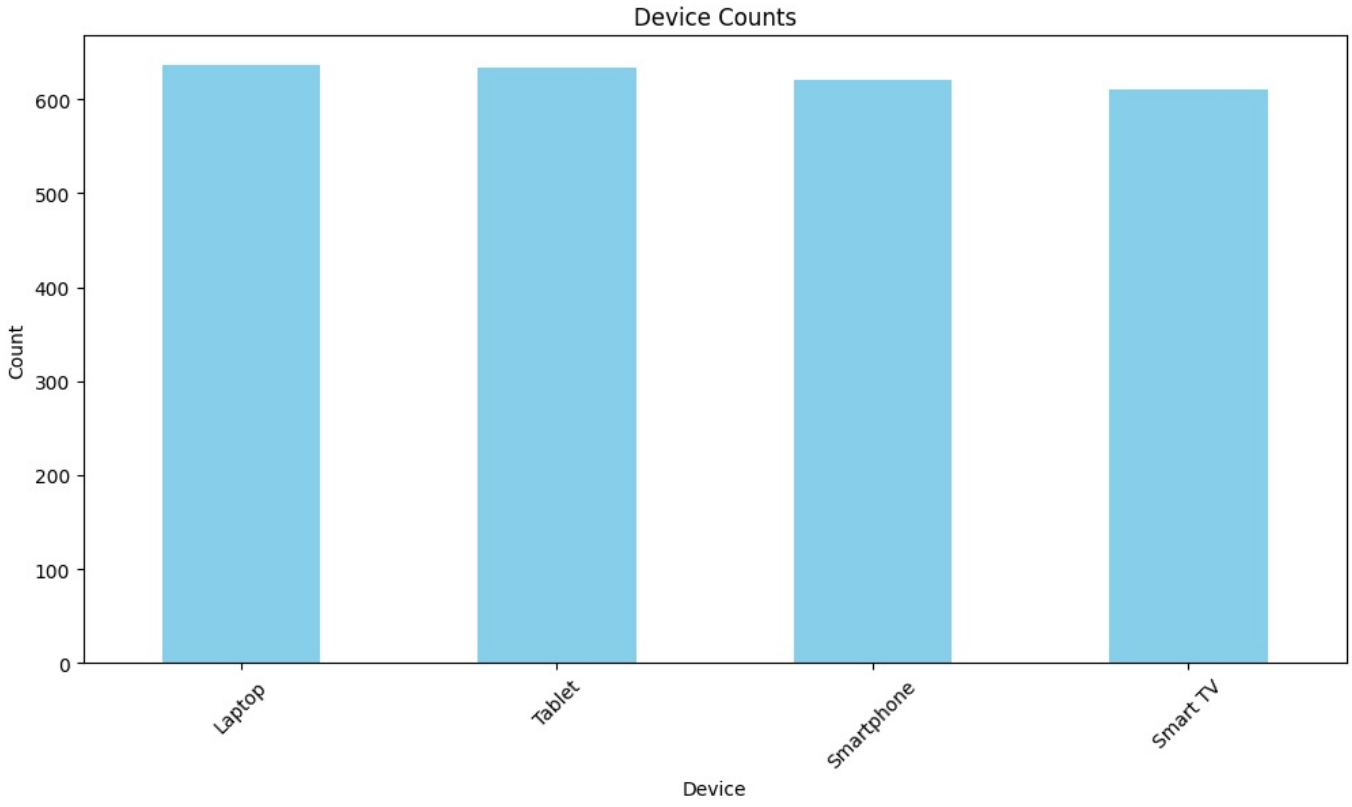


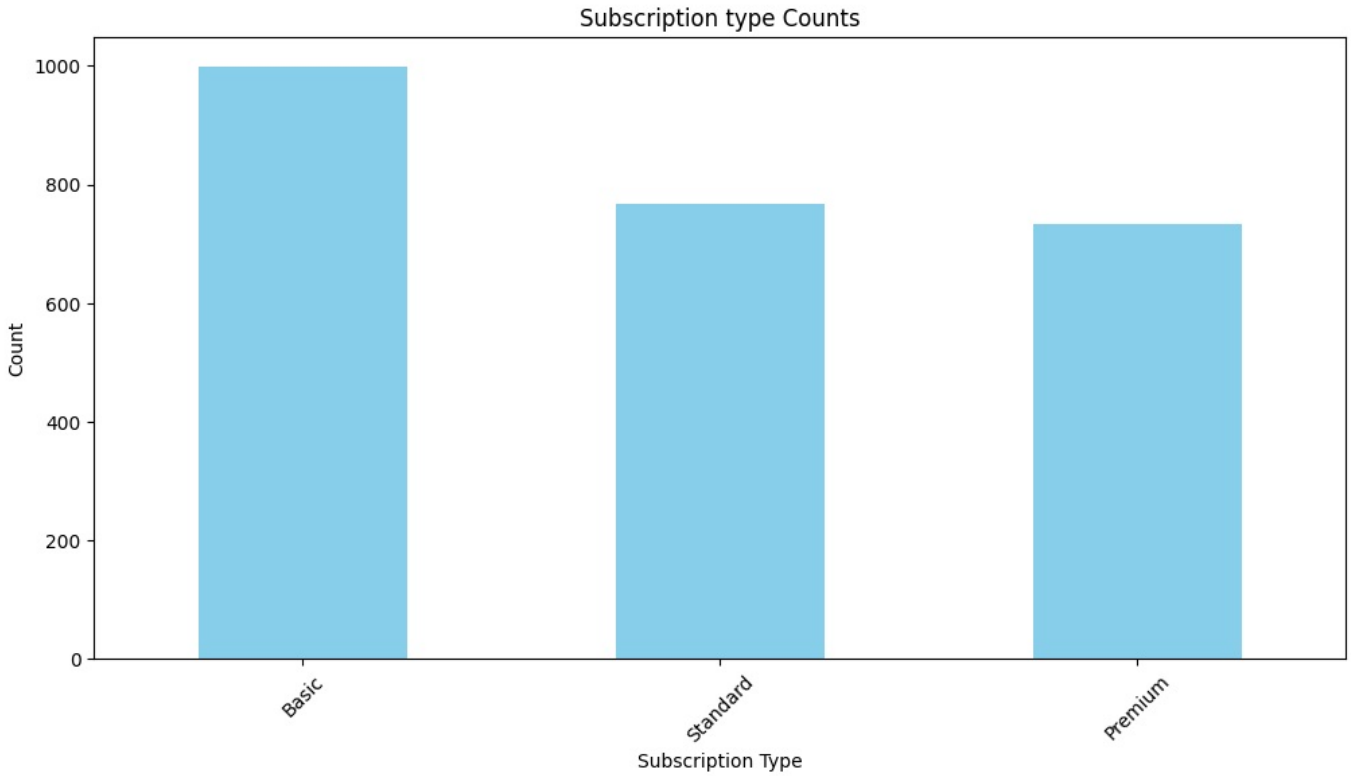
Loop chart acc to Number of users

In [8]:
```
columns_titles = {
    'Gender': 'Gender Counts',
    'Device': 'Device Counts',
```

```
    'Subscription Type': 'Subscription type Counts'

}

for column, title in columns_titles.items():
    plt.figure(figsize=(12,6))
    df[column].value_counts().plot(kind='bar' , color='skyblue')
    plt.title(title)
    plt.xlabel(column)
    plt.ylabel('Count')
    plt.xticks(rotation=45)
    plt.show()
```





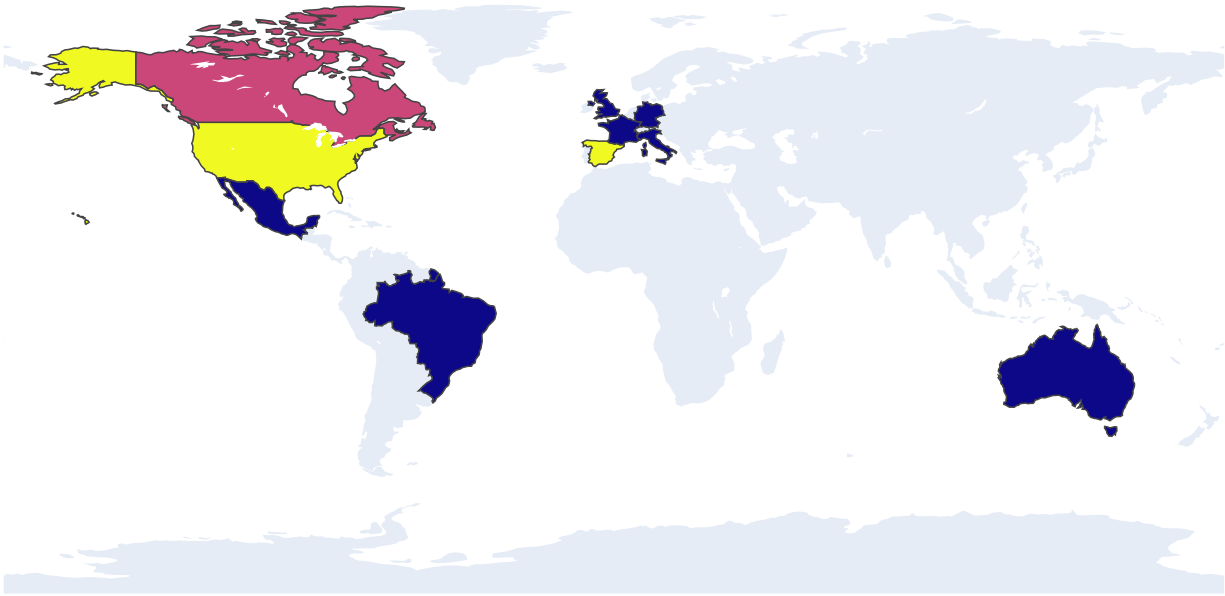


Map View

In [9]:
```
user_count_by_country = df['Country'].value_counts().reset_index()
user_count_by_country.columns = ['Country','User Count']

import plotly.express as px
```

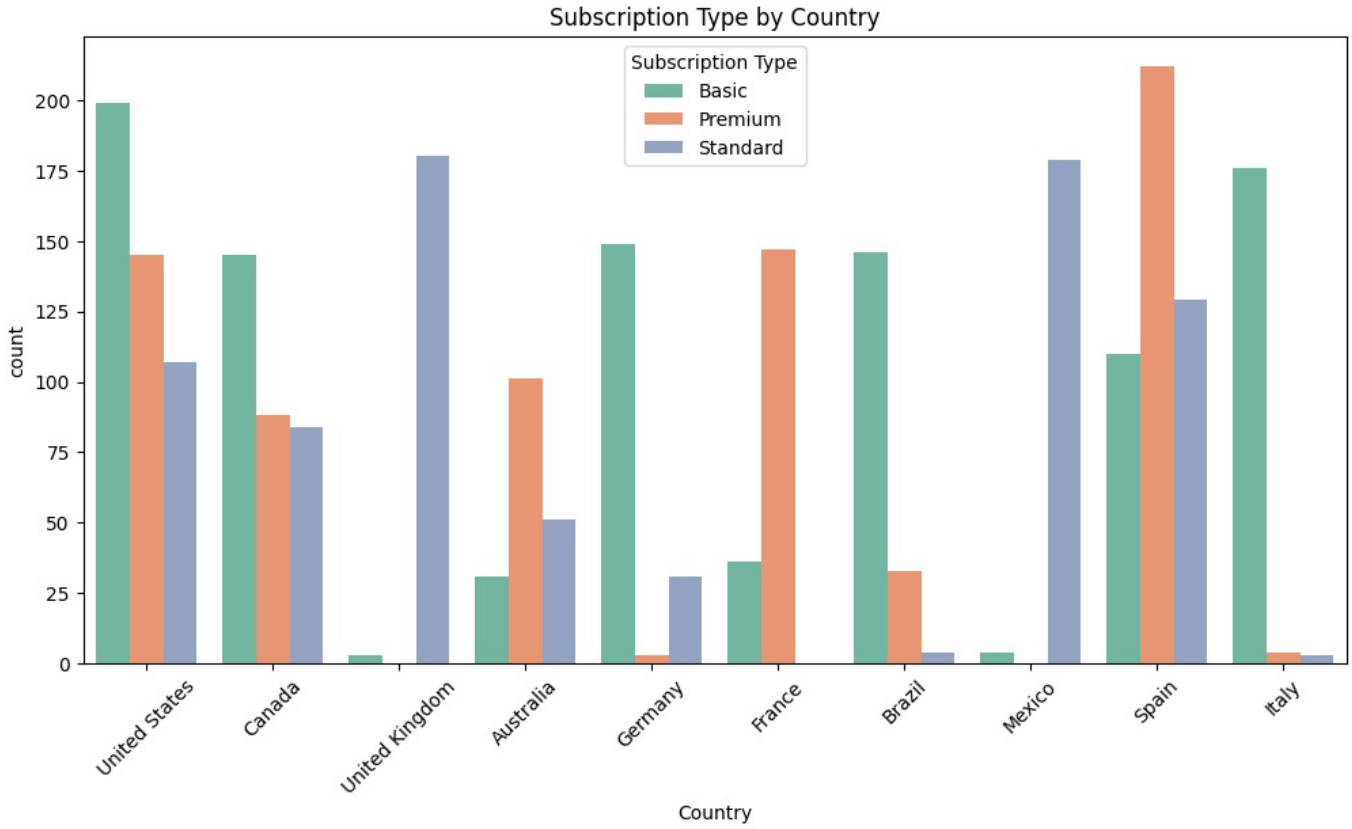
In [10]:
```
fig = px.choropleth(user_count_by_country,
                    locations='Country',
                    locationmode='country names',
                    color='User Count',
                    hover_name='Country',
                    title='User Distribution by Country',
                    color_continuous_scale= px.colors.sequential.Plasma
                   )

fig.update_layout(
     width = 1000,
     height = 700,
     title_font_size = 24,
     geo = dict(
     showframe = False,
     showcoastlines = False)
)

fig.show()
```

User Distribution by Country



Subscription by Country

In [11]:
```
plt.figure(figsize=(12,6))
sns.countplot(x='Country', hue='Subscription Type',
              data = df, palette='Set2')
plt.title('Subscription Type by Country')
plt.xticks(rotation=45)
plt.show()
```



In [12]:
```
subs_by_country = df.pivot_table(index='Country',
                                 columns='Subscription Type',
                                 values='User ID',
                                 aggfunc='count',
                                 fill_value=0)

subs_by_country
```

Out[12]:

Subscription Type	Basic	Premium	Standard
Country			
Australia	31	101	51
Brazil	146	33	4
Canada	145	88	84
France	36	147	0
Germany	149	3	31
Italy	176	4	3
Mexico	4	0	179
Spain	110	212	129
United Kingdom	3	0	180
United States	199	145	107

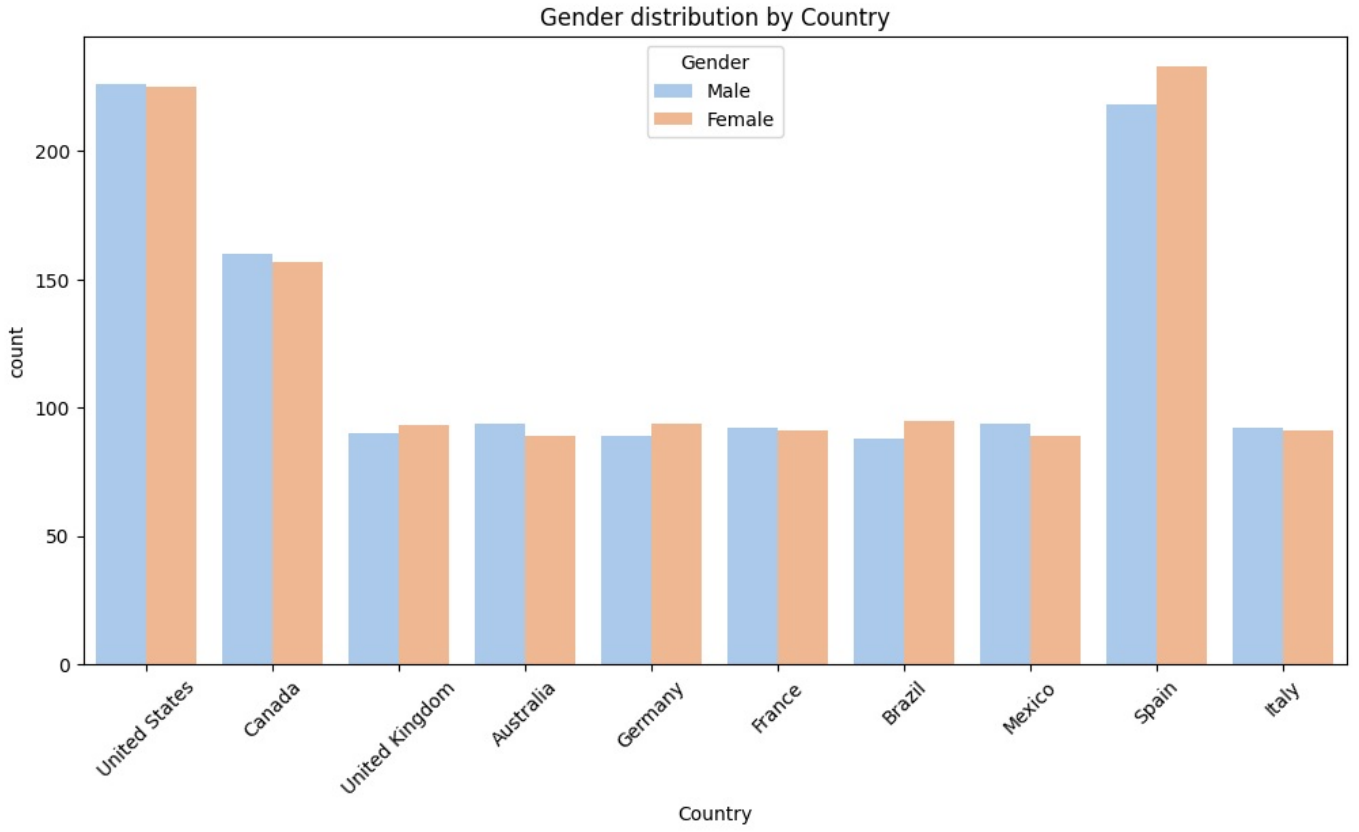
In [13]:
```
subs_by_country['Total']= subs_by_country.sum(axis=1)

subs_by_country
```

Out[13]:

Subscription Type	Basic	Premium	Standard	Total
Country				
Australia	31	101	51	183
Brazil	146	33	4	183
Canada	145	88	84	317
France	36	147	0	183
Germany	149	3	31	183
Italy	176	4	3	183
Mexico	4	0	179	183
Spain	110	212	129	451
United Kingdom	3	0	180	183
United States	199	145	107	451

Gender distribution by Country

In [14]:
```
plt.figure(figsize=(12,6))
sns.countplot(x='Country', hue='Gender',
              data = df, palette='pastel')
plt.title('Gender distribution by Country')
plt.xticks(rotation=45)
plt.show()
```



In [15]:
```
gender_by_country = df.pivot_table(index='Country',
                                   columns='Gender',
                                   values='User ID',
                                   aggfunc='count',
                                   fill_value=0)

gender_by_country
```

Out[15]:

Gender	Female	Male
Country		
Australia	89	94
Brazil	95	88
Canada	157	160
France	91	92
Germany	94	89
Italy	91	92
Mexico	89	94
Spain	233	218
United Kingdom	93	90
United States	225	226

In [16]:

```
subs_by_country_gender= df.pivot_table(index='Country',
                                       columns=['Subscription Type','Gender'],
                                       values='User ID',
                                       aggfunc='count',
                                       fill_value=0)

subs_by_country_gender
```

Out[16]:

Subscription Type	Basic		Premium		Standard	
Gender	Female	Male	Female	Male	Female	Male
Country						
Australia	16	15	45	56	28	23
Brazil	78	68	16	17	1	3
Canada	68	77	40	48	49	35
France	17	19	74	73	0	0
Germany	80	69	1	2	13	18
Italy	86	90	3	1	2	1
Mexico	2	2	0	0	87	92
Spain	60	50	113	99	60	69
United Kingdom	2	1	0	0	91	89
United States	103	96	72	73	50	57

In [17]:

```
subs_by_country_gender2= df.pivot_table(index=['Country','Gender'],
                                       columns='Subscription Type',
                                       values='User ID',
                                       aggfunc='count',
                                       fill_value=0)

subs_by_country_gender2
```

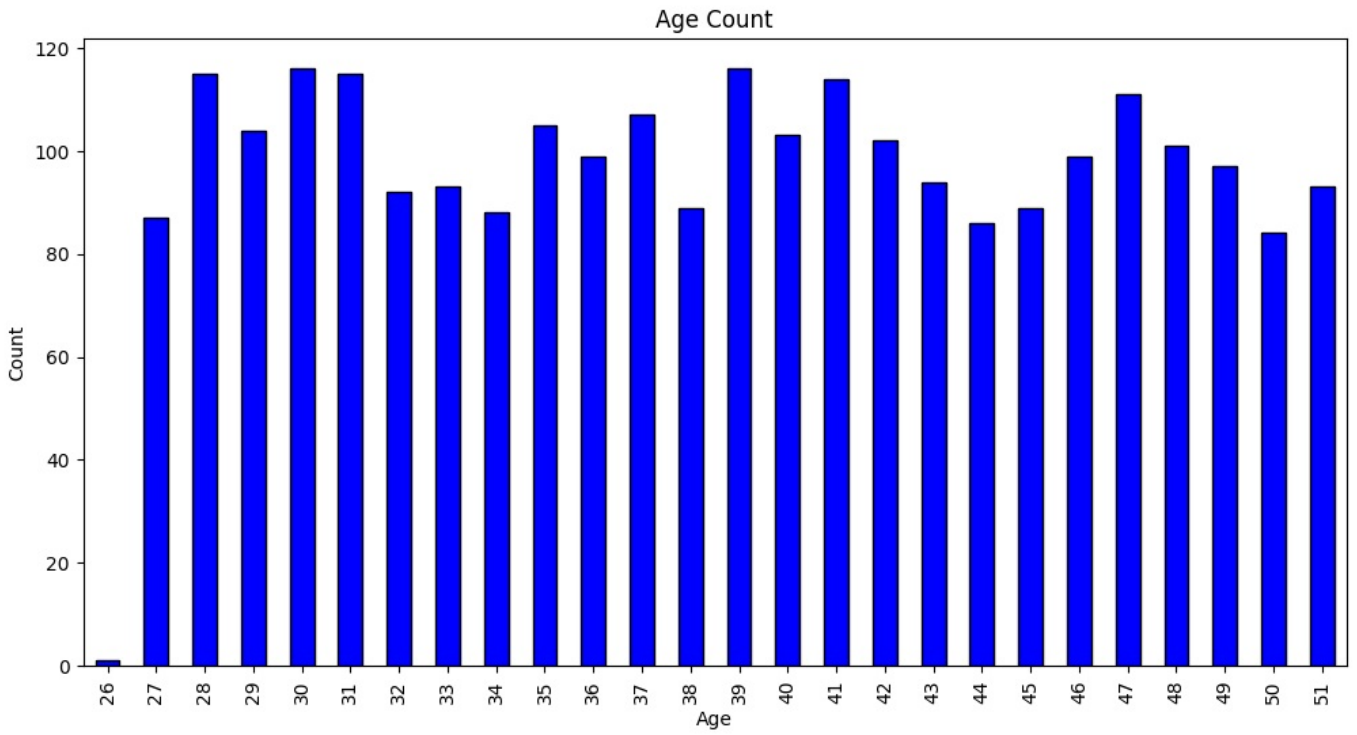
Out[17]:

Country	Gender	Subscription Type: Basic	Premium	Standard
Australia	Female	16	45	28
	Male	15	56	23
Brazil	Female	78	16	1
	Male	68	17	3
Canada	Female	68	40	49
	Male	77	48	35
France	Female	17	74	0
	Male	19	73	0
Germany	Female	80	1	13
	Male	69	2	18
Italy	Female	86	3	2
	Male	90	1	1
Mexico	Female	2	0	87
	Male	2	0	92
Spain	Female	60	113	60
	Male	50	99	69
United Kingdom	Female	2	0	91
	Male	1	0	89
United States	Female	103	72	50
	Male	96	73	57

Users by Age

In [18]:

```
plt.figure(figsize=(12,6))
df['Age'].value_counts().sort_index().plot(kind='bar',
                                           color='blue',
                                          edgecolor='black')


plt.title('Age Count')
plt.xlabel('Age')
plt.ylabel('Count')

plt.show()
```



Subscription Duration

In [19]:
```
df.head()
```

Out[19]:

	User ID	Subscription Type	Monthly Revenue	Join Date	Last Payment Date	Country	Age	Gender	Device	Plan Duration
0	1	Basic	10	15-01-22	10-06-23	United States	28	Male	Smartphone	1 Month
1	2	Premium	15	05-09-21	22-06-23	Canada	35	Female	Tablet	1 Month
2	3	Standard	12	28-02-23	27-06-23	United Kingdom	42	Male	Smart TV	1 Month
3	4	Standard	12	10-07-22	26-06-23	Australia	51	Female	Laptop	1 Month
4	5	Basic	10	01-05-23	28-06-23	Germany	33	Male	Smartphone	1 Month

In [20]:
```
df['Join Date'] = pd.to_datetime(df['Join Date'], format='%d-%m-%y')
df['Last Payment Date'] = pd.to_datetime(df['Last Payment Date'], format='%d-%m-%y')
```

In [24]:
```
df['Duration'] = (df['Last Payment Date'] - df['Join Date']).dt.days
```

In [27]:
```
df['Duration Months'] = df['Duration'].apply(lambda x: math.ceil(x/30))
```

In [28]:
```
average_duration = df['Duration Months'].mean()

print(f"Average Duration: {average_duration}")
```

```
Average Duration: 10.7808
```

In [29]:
```
df.head()
```

Out[29]:

	User ID	Subscription Type	Monthly Revenue	Join Date	Last Payment Date	Country	Age	Gender	Device	Plan Duration	Duration	Duration Months
0	1	Basic	10	2022-01-15	2023-06-10	United States	28	Male	Smartphone	1 Month	511	18
1	2	Premium	15	2021-09-05	2023-06-22	Canada	35	Female	Tablet	1 Month	655	22
2	3	Standard	12	2023-02-28	2023-06-27	United Kingdom	42	Male	Smart TV	1 Month	119	4
3	4	Standard	12	2022-07-10	2023-06-26	Australia	51	Female	Laptop	1 Month	351	12
4	5	Basic	10	2023-05-01	2023-06-28	Germany	33	Male	Smartphone	1 Month	58	2

In [30]:
```
# Lifetime value

df['LTV'] = df['Monthly Revenue'] * df['Duration Months']
```

In [31]:
```
df.head()
```

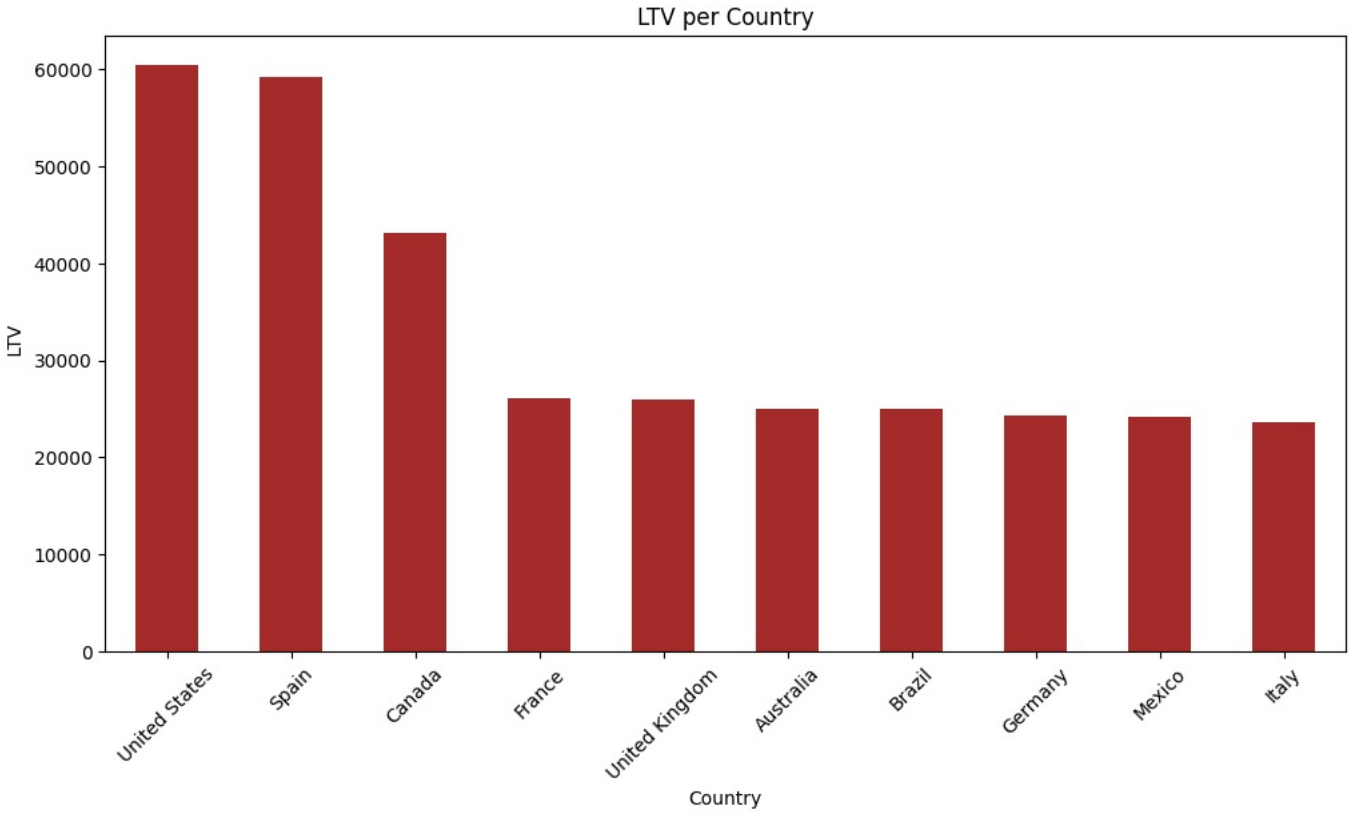
Out[31]:

	User ID	Subscription Type	Monthly Revenue	Join Date	Last Payment Date	Country	Age	Gender	Device	Plan Duration	Duration	Duration Months	LTV
0	1	Basic	10	2022-01-15	2023-06-10	United States	28	Male	Smartphone	1 Month	511	18	180
1	2	Premium	15	2021-09-05	2023-06-22	Canada	35	Female	Tablet	1 Month	655	22	330
2	3	Standard	12	2023-02-28	2023-06-27	United Kingdom	42	Male	Smart TV	1 Month	119	4	48
3	4	Standard	12	2022-07-10	2023-06-26	Australia	51	Female	Laptop	1 Month	351	12	144
4	5	Basic	10	2023-05-01	2023-06-28	Germany	33	Male	Smartphone	1 Month	58	2	20

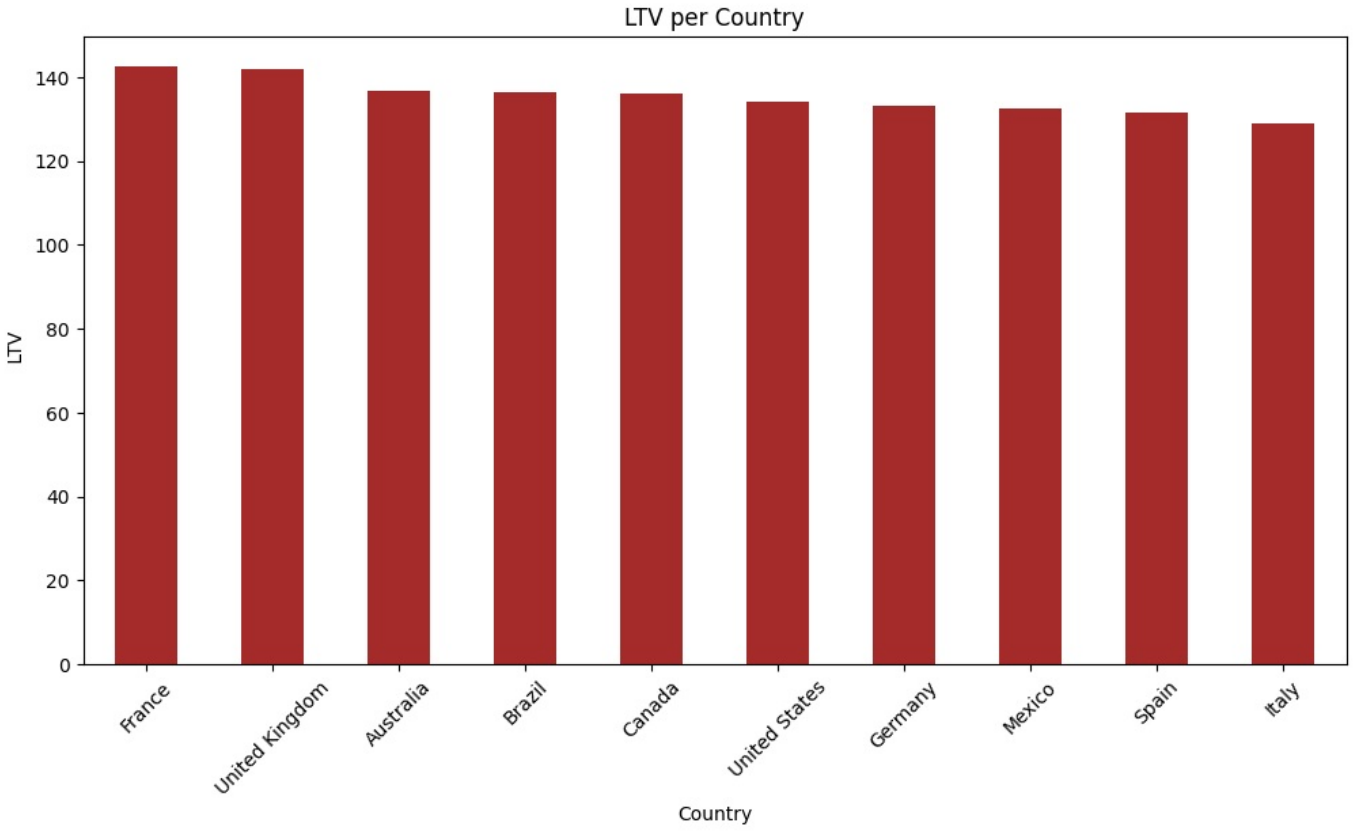
Avereage & Total LTV Customers

In [35]:
```
ltv_per_country_sum = df.groupby('Country')['LTV'].sum().sort_values(ascending=False)

plt.figure(figsize=(12,6))
ltv_per_country_sum.plot(kind='bar',color='brown')
plt.title('LTV per Country')
plt.xlabel('Country')
```

```
plt.ylabel(' LTV')
plt.xticks(rotation=45)
plt.show()
```



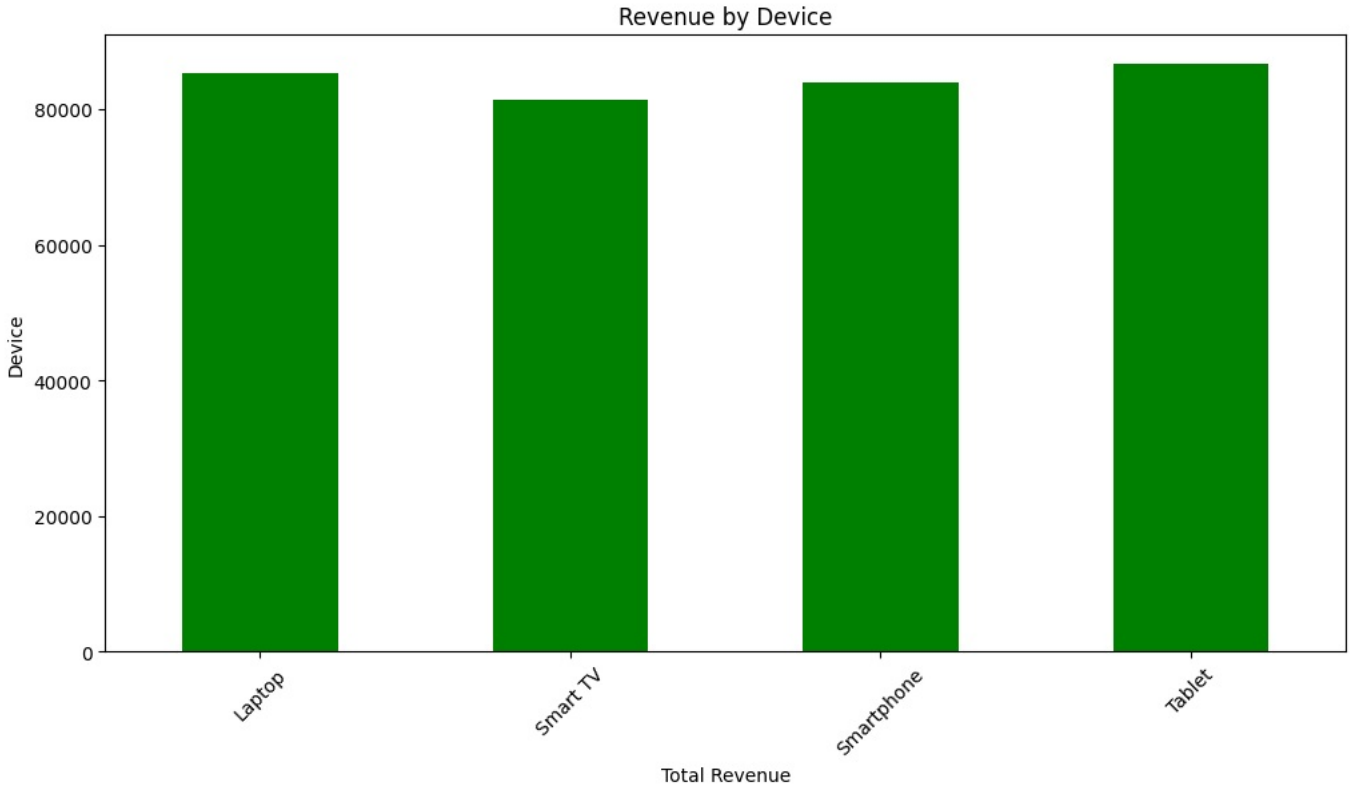
In [38]:
```
ltv_per_country = df.groupby('Country')['LTV'].mean().sort_values(ascending=False)

plt.figure(figsize=(12,6))
ltv_per_country.plot(kind='bar',color='brown')
plt.title('LTV per Country')
plt.xlabel('Country')
plt.ylabel(' LTV')
plt.xticks(rotation=45)
plt.show()
```



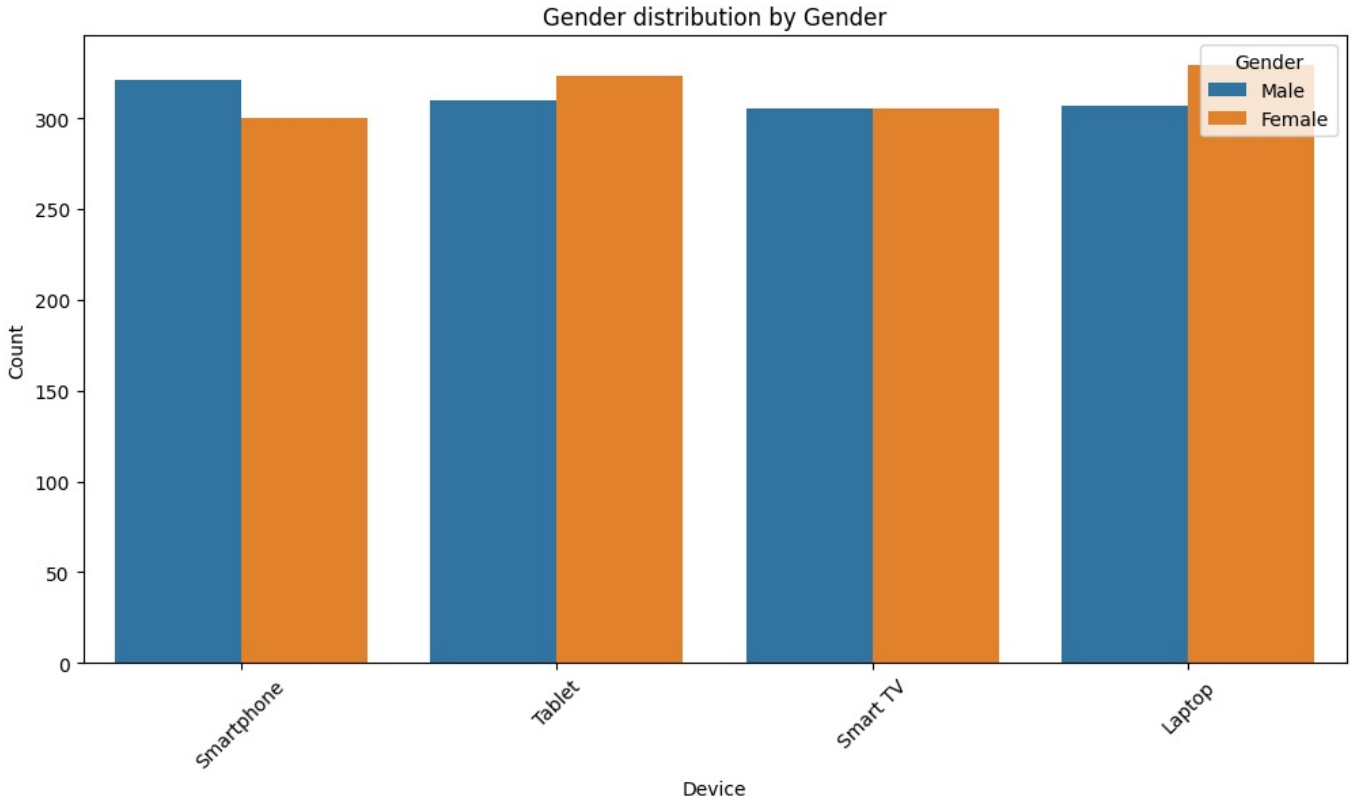
Revenue by Device

In [40]:
```
revenue_by_device = df.groupby('Device')['LTV'].sum()
```

```
plt.figure(figsize=(12,6))
revenue_by_device.plot(kind='bar',color='green')
plt.title('Revenue by Device')
plt.xlabel('Total Revenue')
plt.ylabel('Device')
plt.xticks(rotation=45)
plt.show()
```



In [41]:
```
plt.figure(figsize=(12,6))
sns.countplot(x='Device', hue='Gender', data=df)
plt.title('Gender distribution by Gender')
plt.xlabel('Device')
plt.ylabel('Count')
plt.xticks(rotation=45)
plt.show()
```



Metrics and Analyses

1.**Number of Users per Country**

The highest number of users are from the United States and Spain, each with 451 users, making up 18.04% of the total user base each. Following these are Canada with 317 users (12.68%), and the United Kingdom with 183 users (7.32%). Australia, Germany, France, Brazil, Mexico, and Italy each have the same number of users, 183, accounting for 7.32% of the total user base per country.

2.**Gender Counts**

The overall gender distribution among users is almost equal, with 1257 female users (50.28%) and 1243 male users (49.72%).

The gender distribution is almost equal across all countries, with a nearly balanced ratio of female and male users in each country. For example, in the United States, the distribution is 49.89% female and 50.11% male, and in Spain, it is 51.66% female and 48.34% male, reflecting a similar balance in other countries as well.

3.**Device Counts**

The distribution of devices among users is relatively balanced. The breakdown is as follows:

- Laptops are used by 636 users (25.44%).
- Tablets are used by 633 users (25.32%).
- Smartphones are used by 621 users (24.84%).
- Smart TVs are used by 610 users (24.40%).

4.**Subscription Type Counts**

The distribution of subscription types among users is as follows:

- **Basic:** 999 users (39.96%)
- **Standard:** 768 users (30.72%)
- **Premium:** 733 users (29.32%)

5.**Age Distribution**

The age distribution of users shows the following statistics:

• **Mean Age:** 38.8 years

• **Median Age:** 39.0 years

• **Minimum Age:** 26 years

• **Maximum Age:** 51 years

• **Standard Deviation:** 7.17 years

• Most Common Ages:

• 30 years: 116 users

• 39 years: 116 users

6.**Duration Between Join Date and Last Payment Date**

The duration between the join date and the last payment date among users shows the following statistics:

• **Mean Duration:** 308.6 days

• **Median Duration:** 307.0 days

• **Minimum Duration:** 8 days

• **Maximum Duration:** 655 days

7.**Lifetime Value (LTV)**

The highest total LTV is in the United States, with an LTV of 60,445, accounting for 18.91% of the overall LTV. This is because the United States has the highest number of users. Similarly, Spain has a high total LTV of 59,269 (18.54% of the overall LTV) due to its large user base. Other countries, such as Canada and France, have total LTVs of 43,116 (13.48%) and 26,080 (8.16%) respectively. The total LTVs for the remaining countries, including Australia, Brazil, Germany, Italy, Mexico, and the United Kingdom, range between 23,618 and 25,990, each contributing between 7.38% and 7.84% to the overall LTV. The average Lifetime Value (LTV) per user varies across different countries. France has the highest average LTV at 142.51, followed closely by the United Kingdom at 142.02. Other countries with relatively high average LTVs include Australia (136.73), Brazil (136.50), and Canada (136.01). The United States, despite having the highest total LTV due to its large user base, has an average LTV of 134.02.

Countries like Germany (133.05), Mexico (132.39), and Spain (131.42) have average LTVs that are slightly lower, while Italy has the

lowest average LTV at 129.06.

This analysis highlights that while the United States and Spain have high total LTVs due to their large user bases, countries like France and the United Kingdom lead in terms of average LTV per user.

Recommendations

1.**Focus on High-LTV Countries:**

• The United States and Spain have the highest total LTVs. Consider targeted marketing and retention strategies in these countries to maximize revenue.

• France and the United Kingdom, with the highest average LTVs, should also be prioritized for premium offerings and upsell opportunities.

2.**Gender-Specific Campaigns:**

• The gender distribution is nearly equal across all countries. Tailor marketing campaigns to address the preferences and needs of both male and female users equally.

• Utilize the balanced gender ratio to create inclusive content and promotions that appeal to a wide audience.

3.**Device Optimization:**

• With a relatively even distribution of devices used by subscribers (Laptops, Tablets, Smartphones, Smart TVs), ensure that the platform is optimized for all these devices.

• Develop device-specific features or promotions to enhance user experience and engagement.

4.**Subscription Type Promotions:**

• The Basic subscription type has the highest number of users. Consider introducing features or benefits to encourage upgrades to Standard or Premium plans.

• Implement targeted promotions to highlight the value of higher-tier subscriptions to Basic plan users.

5.**Future Analysis**:

• Conduct deeper analyses on user behavior, content preferences, and churn rates to refine marketing and retention strategies.

• Explore geographical trends and regional preferences to tailor content and offerings to different markets.

In [ ]: