Jenny Cosmetics Store Report

In [2]:
```
# import the Libraries
import pandas as pd
import  numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

In [3]:
```
# load the dataset
df = pd.read_csv(r"C:\Users\dell\Downloads\cosmetics.csv")
#check the first 5 rows of the dataset
df.head()
```

Out[3]:

	Sales Person	Country	Product	Date	Amount ($)	Boxes Shipped
0	Lucas Verma	Canada	Aloe Vera Gel	2022-04-30	7897.13	358
1	Ethan Reddy	UK	Aloe Vera Gel	2022-01-25	16376.88	449
2	Ananya Gupta	India	Body Butter Cream	2022-08-22	5599.68	264
3	Ananya Gupta	New Zealand	Salicylic Acid Cleanser	2022-08-26	2966.47	144
4	Sophia Nair	UK	Body Butter Cream	2022-05-19	6828.68	484

In [4]:
```
# check data info
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 374 entries, 0 to 373
Data columns (total 6 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Sales Person   374 non-null    object
 1   Country        374 non-null    object
 2   Product        374 non-null    object
 3   Date           374 non-null    object
 4   Amount ($)     374 non-null    float64
 5   Boxes Shipped  374 non-null    int64
dtypes: float64(1), int64(1), object(4)
memory usage: 17.7+ KB
```

Data Cleaning

In [5]:
```
# check for null values
df.isnull().sum()
```

Out[5]:
```
Sales Person     0
Country          0
Product          0
Date             0
Amount ($)       0
Boxes Shipped    0
dtype: int64
```

In [6]:
```
# check for duplicate
df.duplicated().sum()
```

Out[6]:
```
0
```

In [7]:
```
# convert date to python datetime
df['Date'] = pd.to_datetime(df['Date'])
```

EXPLORATORY DATA ANALYSIS

In [8]:
```
# PERFORM STATS ANALYSIS
df.describe().T
```

Out[8]:

	count	mean	min	25%	50%	75%	max	std
Date	374	2022-05-04 00:38:30.160427776	2022-01-01 00:00:00	2022-03-15 00:00:00	2022-05-02 00:00:00	2022-06-28 18:00:00	2022-08-30 00:00:00	NaN
Amount ($)	374.0	7778.353262	119.82	3325.25	6513.655	11331.8975	23977.48	5655.378093
Boxes Shipped	374.0	249.072193	10.0	140.0	246.0	364.0	499.0	144.235296

In [9]:
```
# check countries with branches
df['Country'].value_counts()
```

Out[9]:
```
Country
USA            75
New Zealand    73
Australia      70
UK             61
India          48
Canada         47
Name: count, dtype: int64
```

In [10]:
```
# check product category
df['Product'].unique().tolist()
```

Out[10]:
```
['Aloe Vera Gel',
 'Body Butter Cream',
 'Salicylic Acid Cleanser',
 'Lip Balm Pack',
 'Rose Water Toner',
 'Tea Tree Moisturizer',
 'Face Sheet Masks',
 'Hair Repair Oil',
 'Vitamin C Cream',
 'Niacinamide Toner',
 'Under Eye Cream',
 'Hydrating Face Serum',
 'Charcoal Face Wash',
 'Anti-Aging Serum',
 'SPF 50 Sunscreen']
```

In [11]:
```
# How many sales does Jenny have?
df['Sales Person'].unique().tolist()
```

Out[11]:
```
['Lucas Verma',
 'Ethan Reddy',
 'Ananya Gupta',
 'Sophia Nair',
 'Isabella Roy',
 'Noah Mehta',
 "Olivia D'Souza",
 'Ava Sharma',
 'Liam Patel',
 'Mason Kapoor']
```

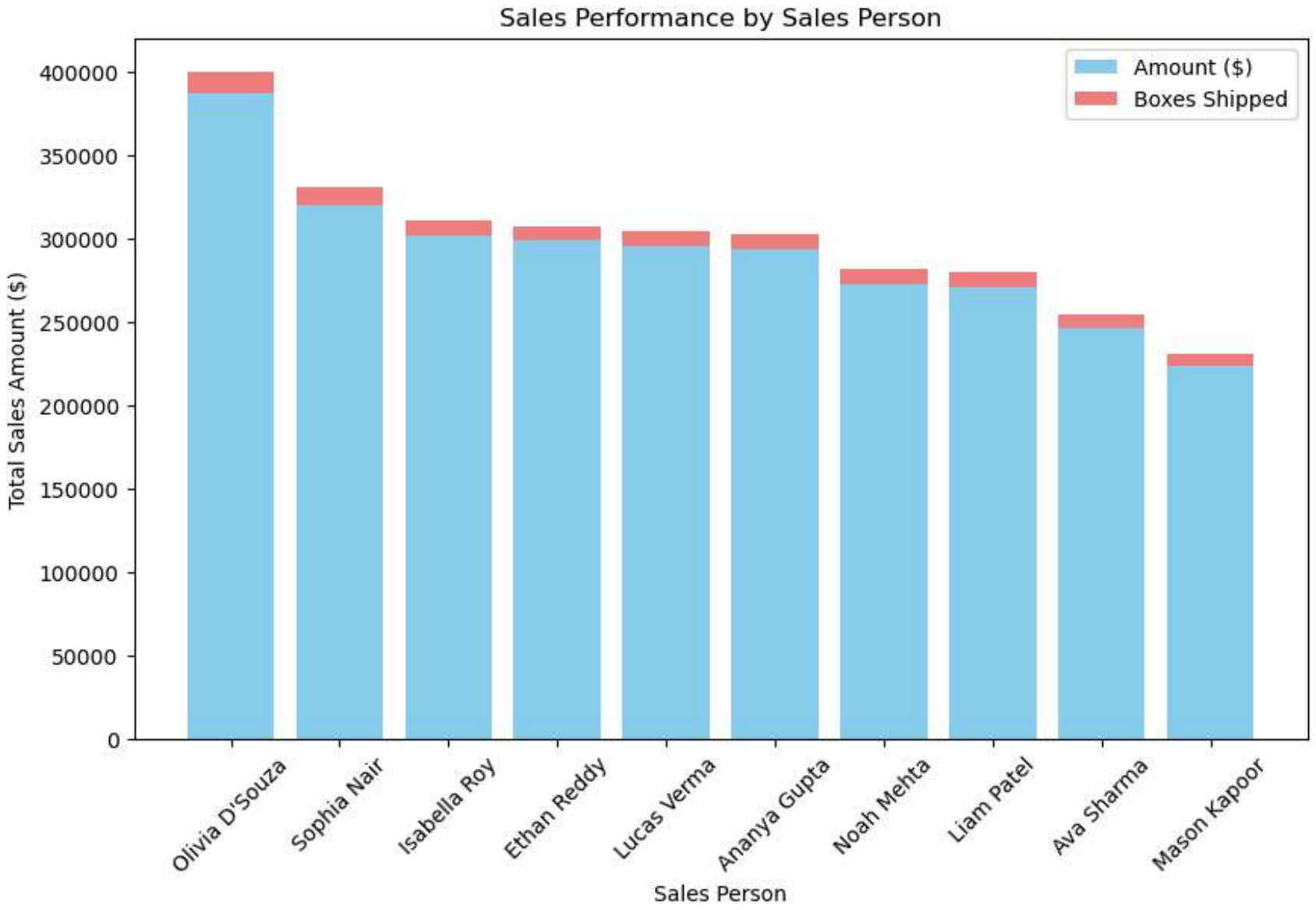
Sales performance overview

In [12]:
```
# sales performance in terms of total sales by sales person
perf = df.groupby('Sales Person')[['Amount ($)','Boxes Shipped']].sum().sort_values(by='Amount ($)',ascending=False)
perf
```

Out[12]:

Sales Person	Amount ($)	Boxes Shipped
Olivia D'Souza	387405.91	12619
Sophia Nair	319887.82	10473
Isabella Roy	302087.60	9116
Ethan Reddy	298595.61	8814
Lucas Verma	295166.91	9330
Ananya Gupta	293204.67	9669
Noah Mehta	272188.08	9403
Liam Patel	270960.55	8513
Ava Sharma	246174.28	7849
Mason Kapoor	223432.69	7367

In [13]:
```
# plot the sales performace chart in stacked bar format
plt.figure(figsize=(10,6))
plt.bar(perf.index,perf['Amount ($)'],color='skyblue',label='Amount ($)')
plt.bar(perf.index, perf['Boxes Shipped'], color='lightcoral', bottom=perf['Amount ($)'], label='Boxes Shipped')
plt.xlabel("Sales Person")
plt.ylabel("Total Sales Amount ($)")
plt.title("Sales Performance by Sales Person")
plt.xticks(rotation=45)
plt.legend()
plt.show()
```



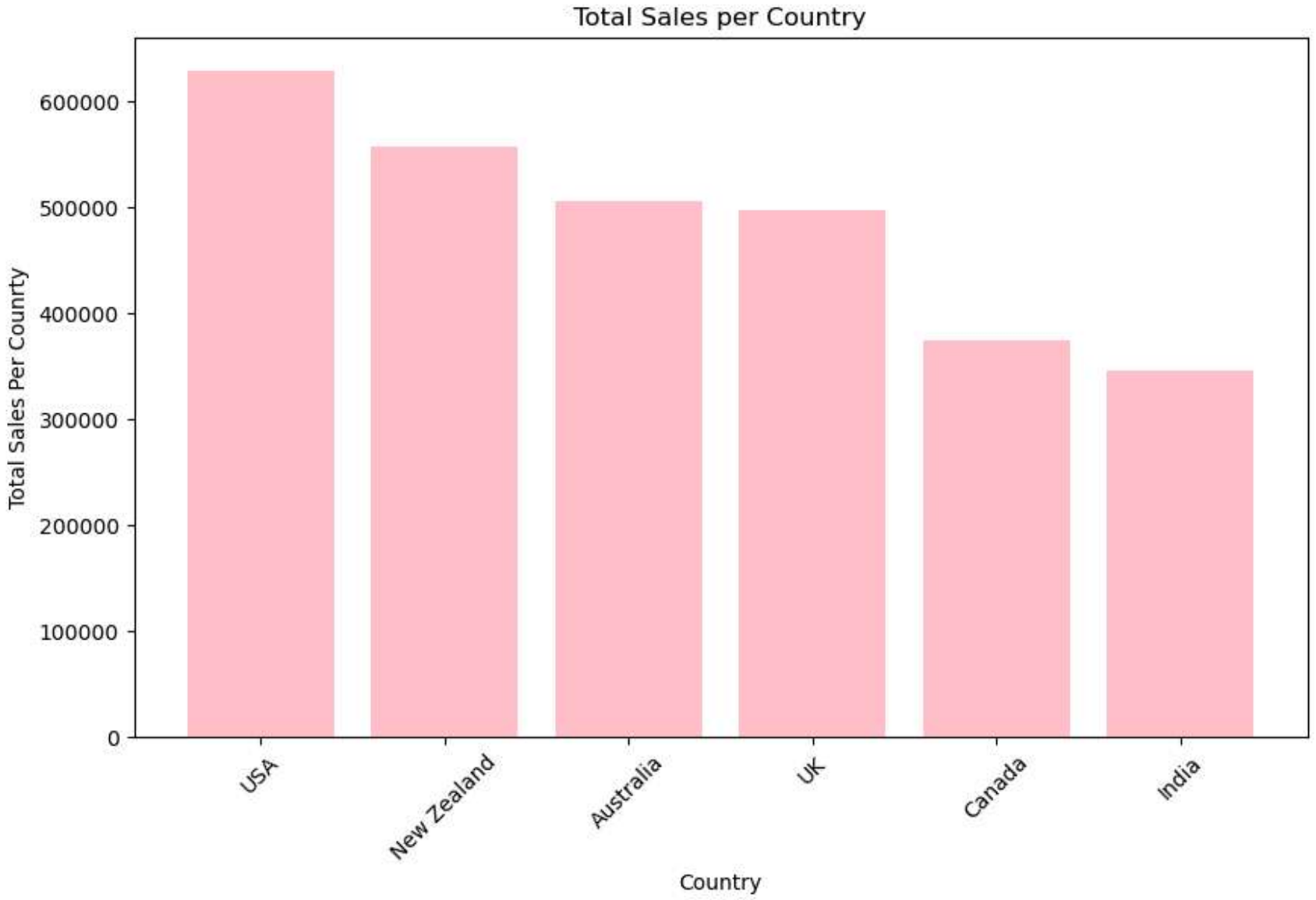
Total Sales PernCountry By Sales Person

In [14]:
```
# TOTAL SALES PER COUNTRY
con = df.groupby(['Country'])['Amount ($)'].sum().sort_values(ascending=False)
```

```
con
```

Out[14]:
```
Country
USA            628487.86
New Zealand    557059.85
Australia      505497.64
UK             497061.54
Canada         374562.31
India          346434.92
Name: Amount ($), dtype: float64
```

In [15]:
```
# plot the total sales per country
plt.figure(figsize=(10,6))
plt.bar(con.index, con.values, color='pink',)
plt.title("Total Sales per Country")
plt.xlabel("Country")
plt.ylabel("Total Sales Per Counrty")
plt.xticks(rotation=45)
plt.show()
```



Monthly Sales Performance

In [16]:
```
# monthly sales performance
# create a month column and extract the month from date
```

```
df['Month'] = df['Date'].dt.to_period('M')
```

In [17]:
```
# extract month name from date
df['Month'] =df['Date'].dt.month_name()
# check
df.head()
```

Out[17]:

	Sales Person	Country	Product	Date	Amount ($)	Boxes Shipped	Month
0	Lucas Verma	Canada	Aloe Vera Gel	2022-04-30	7897.13	358	April
1	Ethan Reddy	UK	Aloe Vera Gel	2022-01-25	16376.88	449	January
2	Ananya Gupta	India	Body Butter Cream	2022-08-22	5599.68	264	August
3	Ananya Gupta	New Zealand	Salicylic Acid Cleanser	2022-08-26	2966.47	144	August
4	Sophia Nair	UK	Body Butter Cream	2022-05-19	6828.68	484	May

In [18]:
```
# extract year from date
df['Year'] = df['Date'].dt.year
# check
df.head()
```

Out[18]:

	Sales Person	Country	Product	Date	Amount ($)	Boxes Shipped	Month	Year
0	Lucas Verma	Canada	Aloe Vera Gel	2022-04-30	7897.13	358	April	2022
1	Ethan Reddy	UK	Aloe Vera Gel	2022-01-25	16376.88	449	January	2022
2	Ananya Gupta	India	Body Butter Cream	2022-08-22	5599.68	264	August	2022
3	Ananya Gupta	New Zealand	Salicylic Acid Cleanser	2022-08-26	2966.47	144	August	2022
4	Sophia Nair	UK	Body Butter Cream	2022-05-19	6828.68	484	May	2022

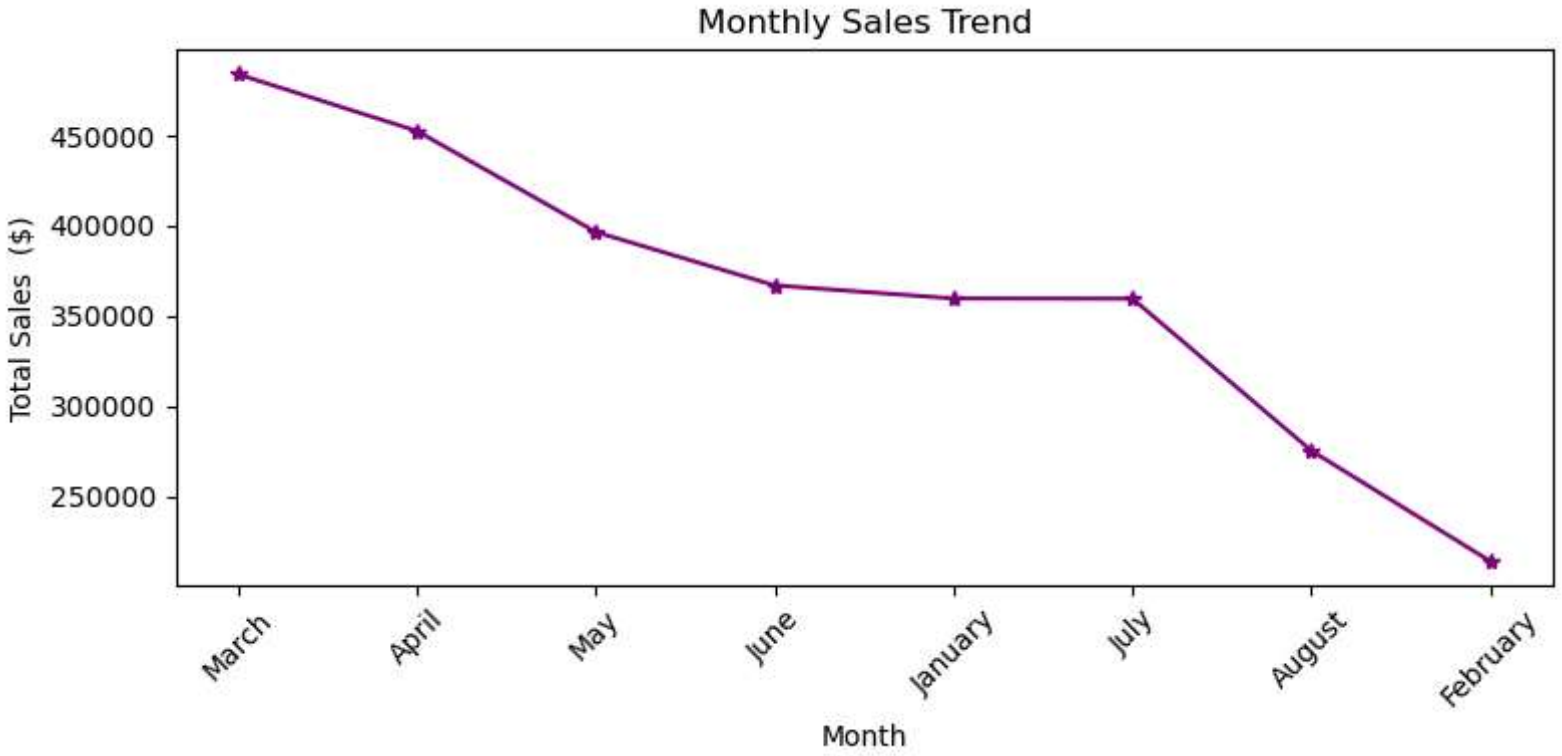
In [19]:
```
#  check year period
df['Year'].nunique()
```

Out[19]: 1

In [20]:
```
# group sales by month
trend = df.groupby('Month')['Amount ($)'].sum().sort_values(ascending=False)
trend
```

Out[20]:
```
Month
March       484101.59
April       452650.04
May         396609.09
June        367001.65
January     359762.51
July        359655.73
August      275298.95
February    214024.56
Name: Amount ($), dtype: float64
```

In [21]:
```
# plot info in chart
plt.figure(figsize=(8,4))
plt.plot(trend.index, trend.values, marker='*', linestyle='-', color='purple')
plt.xlabel("Month")
plt.ylabel("Total Sales  ($)")
plt.title("Monthly Sales Trend")
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



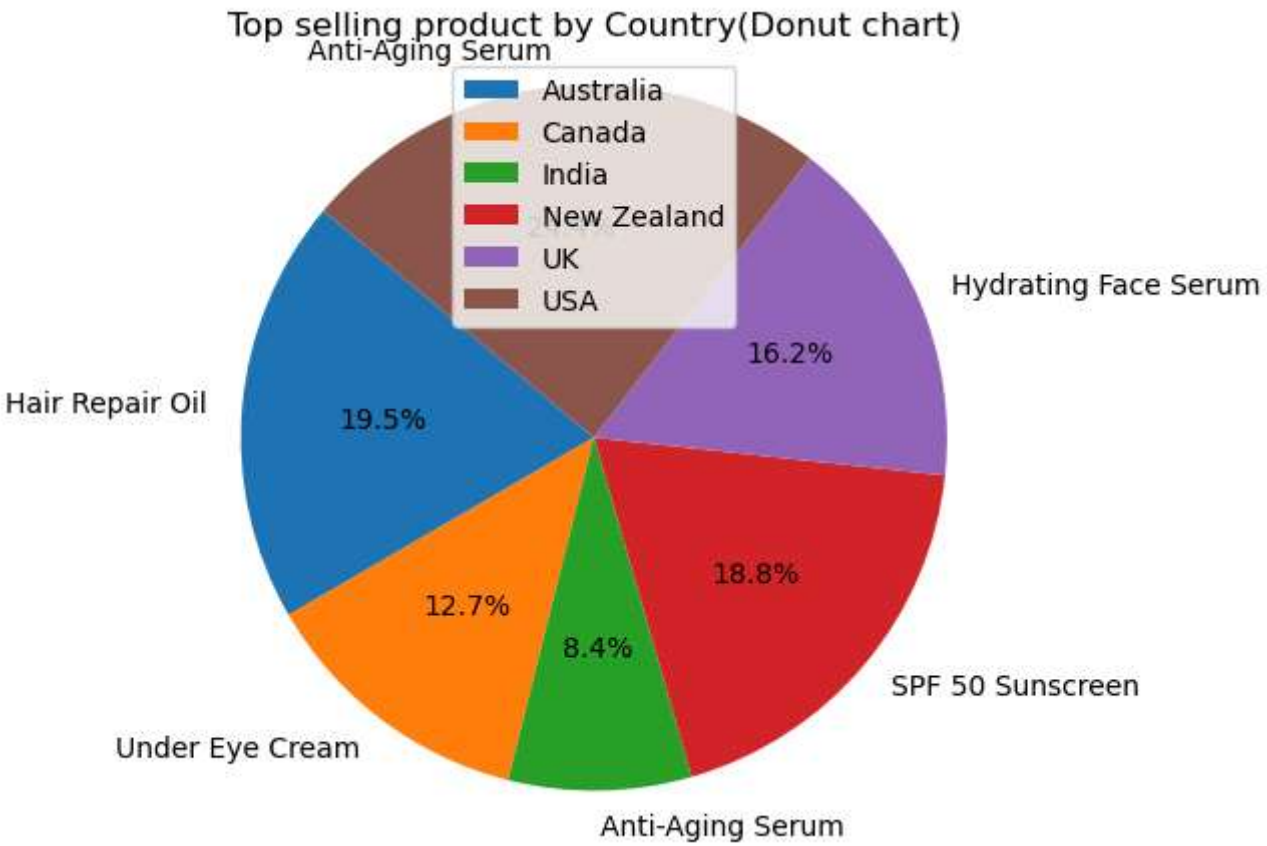
Top Product Analysis

In [22]:
```
# Top selling product by country
top_products = df.groupby(['Country', 'Product'])['Amount ($)'].sum().reset_index()
top_products = top_products.sort_values(by=['Country', 'Amount ($)'], ascending=[True,False])
top_products = top_products.groupby('Country').head(1)
top_products
```

Out[22]:

	Country	Product	Amount ($)
5	Australia	Hair Repair Oil	91002.87
28	Canada	Under Eye Cream	59336.49
31	India	Anti-Aging Serum	39111.02
55	New Zealand	SPF 50 Sunscreen	87897.03
66	UK	Hydrating Face Serum	75719.24
76	USA	Anti-Aging Serum	113821.81

In [23]:
```
# plot a donut chart for top product by country
plt.figure(figsize=(5,5))
plt.pie(top_products['Amount ($)'], labels=top_products['Product'], autopct= '%1.1f%%', startangle=140)
plt.axis("equal") # equal aspect ratio ensures that pie is drawn as a circle
plt.title("Top selling product by Country(Donut chart)")
plt.legend(top_products['Country'])
plt.show()
```



`KPIs'

In [24]:
```
# measur KPIs
kpi = {
     'Total Sales': df['Amount ($)'].sum(),
     'Total Boxes Shipped': df['Boxes Shipped'].sum(),
     'Unique Products Sold': df['Product'].nunique(),
     'Total Countries': df['Country'].nunique(),
     'Total Sales Persons': df['Sales Person'].nunique()
}
```

In [25]:
```
kpi.items()
```

Out[25]:
```
dict_items([('Total Sales', 2909104.12), ('Total Boxes Shipped', 93153), ('Unique Products Sold', 15), ('Total Countries', 6), ('Total Sales Persons', 10)])
```

In [26]:
```
for key, value in kpi.items():
    print(key,value)
```

```
Total Sales 2909104.12
Total Boxes Shipped 93153
Unique Products Sold 15
Total Countries 6
Total Sales Persons 10
```

In [ ]: