CNIT 372 Group Project

Final Report

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Background:

Our group chose to research Option B: YouTube Data Analysis as a Content Creator. This data can be used to analyze genres, videos, and popular youtube channels within those genres. YouTube is a growing platform where individuals or groups can upload videos and create content for a specified audience. An average content creator (YouTuber) can make $0.18 per view or $18 per 1,000 views. One of the most popular YouTubers made an estimated $54 million in 2021, with some of his videos reaching an upwards of 142 million views[1]. We can analyze popular content creators like MrBeast to measure the number of uploads, content category, and amount of views. We can also analyze the earnings of the content to gain insights into which content generates the most income. This information could help future YouTubers create successful channels that meet a target audience.

We are using the Global YouTube Statistics dataset from Kaggle. We plan on analyzing which categories are most popular, in which country they are most popular, and how much earnings are generated. Based on that information, a potential content creator will gain insightful information about what content is successful and in which country.

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[1] Daugherty & Sineriz. "How Much Do Youtubers Make?"

Team: describe your team members, and the contributions made by each member (who worked on which parts of the project).

Megan Clecak:

About me:
Senior pursuing Bachelor's of Science in Computer Information and Technology.

Contributions:
Milestone 1:
- collected each members phone numbers to create a groupchat
- Initiated the communication within the group
- Collected emails so that we could share a folder to work in the same environment
- Supported communication for project decision
- Added tables Youtube Content Creators/Videos
- Added description of data
- Created ERD of tables

Milestone 2:
- Listed 3 ideas based on the Milestone 1 document and formed use-case questions.
- Described how the questions I came up with would be useful in a realistic situation

Milestone 3:
- Assisted creating 3 new tables for data set
- Assisted helping clean data set with google sheets
- Created tables in SQL and imported data
- Created "master database" and granted permissions to all group members
- Assisted creating the import data set into empty database script worksheet
- De-bugged and fixed query for question 3
- Completed descriptions/solution portions of question 1 & 2

Final:
- Completed database description for the 3 new tables created from milestone 3, ERD, and relationships of the tables
- Completed Question 6 query, output, and descriptions
- Updated Instruction set in the Github repository
- Assisted with creating and editing slides for group presentation
- Updated Question 7 & 9 descriptions and solution
- Revised Question 9 and description

Yasmine Graham:

About me:
Senior in Computer and Information Technology pursuing a Bachelors of Science. Minoring in Forensic Sciences and Advanced Global Technology.

Contributions:
Milestone 1:
- Organized outline on document for Milestone 1
- Supported communication for the project decision
- Suggested using "**VidIQ**" youtube extension that collects data and supports our analysis and data points
- Added table for Trending Status
- Added descriptions for the table
- Included a source for a large dataset of US trending videos that may be used
- Added description for the Trending Status table

Milestone 2:
- Listed 2 ideas based on the Milestone 1 document and formed use-case questions.
- Described how the questions I came up with would be useful in a realistic situation.

Milestone 3:
- Cleaned the data so that it would import into SQL seamlessly
- Changed the "NAN" values to "NULL" so SQL could understand the value
- Imported data into SQL Developer
- Granted SELECT, UPDATE access to the teammates
- Created import data set into empty database script
- Updated Problem Description
- Wrote a query to solve question 1

Final:
- Created presentation
- Outlined the presentation
- Wrote project outline for presentation
- Wrote solution 1 and solution 5 for the presentation
- Created solutions for question 1
- Wrote descriptions for question 1
- Revised problem description
- Created solution for question 6
- Wrote description for question 6
- Revised/Wrote question 8 description

Elliot Martin:

About me:
Junior in Computer and Information Technology pursuing a Bachelors of Science in Computer and Information Technology.

Contributions:
Milestone 1:
- Added description for Content creators table
- Added description for Videos table

Milestone 2:
- Listed 2 ideas based on the Milestone 1 document and formed use-case questions.
- Described how the question I came up with would be useful in a realistic situation.

Milestone 3:
- Fixed the Milestone 1 questions and descriptions
- Helped create PL/SQL solutions

Final:
- Fixed the Milestone 1 questions and descriptions
- Created PL/SQL solutions for questions 2 and 4
- Helped edit and finish question descriptions
- Created PL/SQL solutions for questions 8, 9, and 10

Marshall Bledsoe:

About me:
Senior pursuing a Bachelor's of Science in Computer and Information Technology with minors in Communication and Organizational Leadership. Graduating this December.

Contributions:
Milestone 1:
- Aided in brainstorming potential table ideas
- Expanded the data description section
- Expanded on how it could help us create more successful youtube videos

Milestone 2:
- Expanded on how it could help us create more successful youtube videos
- Listed 3 ideas based on the Milestone 1 document and formed use-case questions.

Milestone 3:
- Cleaned data set with google sheets and created 3 new data sheets
- Assisted creating 3 new tables for data set
- Created tables in SQL and imported data
- Created working database
- Wrote the procedure for question 5
- Debugged all five question solutions
- Wrote the rationale and SQL knowledge sections for question 4

Final:
- Prepared slides for the 'Tables in our Database' slide in the PowerPoint
- Created visuals for questions 1 and 2 in the PowerPoint
- Remade the problem rationale and the solution for question 10
- Compiled all our procedures and functions into one package
- Uploaded the SQL file with our procedures onto the project's GitHub repository.
- Revised the question and solution for Question 10
- Created a trigger to fire whenever a row is deleted from the Channel_Stats table
- Added the updated Question 10 to the package
- Uploaded the updated package to the GitHub Repository

Database Description:

The first table is the YoutuberInfo table. This contains information about a specific youtuber, for example Mr. Beast, such as their rank (world wide), rank in country, category (genre), uploads to their channel, country (where they're from), and channel type. This information is useful because we can analyze information regarding the specific Youtuber such as their in-country rank versus their worldwide rank.

The second table is the CountryStats table. This table contains a country id unique to each country, country name, and population of that country. The primary key for this table is country, since each country name is unique. This table was created for various applications in our Youtube content creator analysis such as comparing Youtuber income to population of a country.

The last and final table was the channe_stats table. This table contained information about a specific Youtube channel such as channel id, rank (in country), youtuber, subscribers, video views, lowest yearly earnings, highest yearly earnings, and country. This table contains one primary key: channel id and two foreign keys: youtuber (referencing the youtuberinfo table) and country (referencing the CountryStats table). This table was created to contain more information specifically about Youtube channels and can be used to analyze trends of income, rank, or videos based on a specific country or Youtuber.

The ERD (Figure 1) contains the relationship of all tables, with a 1 to 1 relationship with youtuberinfo and channel_stats tables and a 1 to many relationship with the countrystats and channel_stats table. Each table is also outlined in three charts below displaying the column name and datatype. A side note for all three tables: The ERD contains INTEGER where NUMBER should be. Visual Paradigm did not have this option for me when I created the ERD, so I substituted with INT datatype instead.

Countrystats	
Column Name	**Datatype**
country (PK)	Varchar2(255)
countryID	Number
population	Number

YoutuberInfo

Column Name	Datatype
youtuber (PK)	Varchar2(255)
rank	Number
rank_in_country	Number
category	Varchar2(255)
uploads	Number
country	Varchar2(255)
channel_type	Varchar2(255)
created_date	Date

Channel_stats

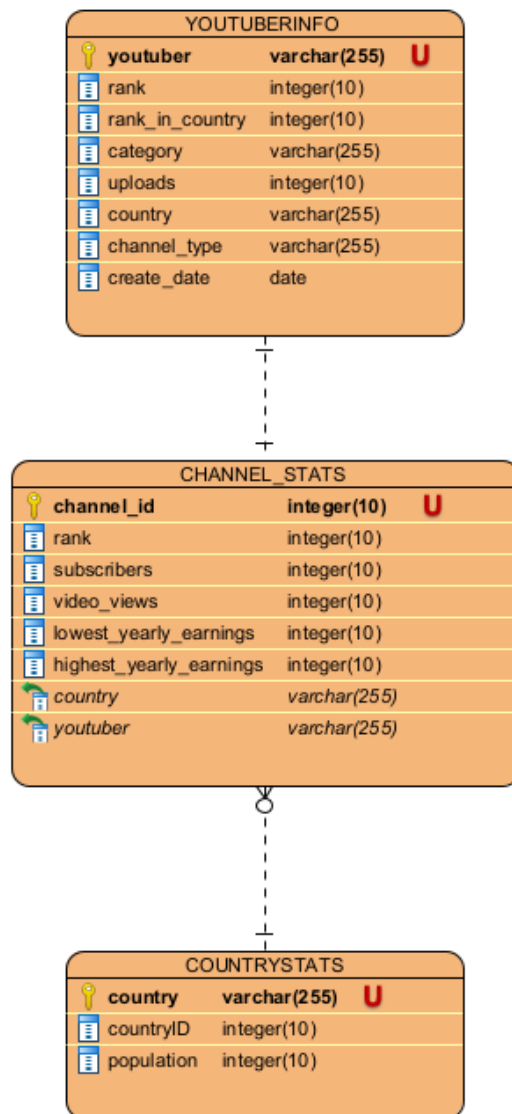| Column Name	Datatype
channel_id (PK)	Number
rank	Number
subscribers	Number
video_views	Number
lowest_yearly_earnings	Number
highest_yearly_earnings	Number
country (FK)	Varchar2(255)
youtuber (FK)	Varchar2(255)

Figure 1: ERD of YoutuberInfo, channel_stats, and countrystats table

Questions:

Question 1:

Which channel categories or niches are found in the dataset?

This question is important for a new or aspiring youtube content creator because they may want to look at what categories there are for youtube. Based on this query, you can also look at the frequency of counts per category, which may give some insight on how popular one category is over another. A new creator may also consider how popular this category is, indicating it may also be difficult to start a channel in that category because of how many youtubers are already creating content. For example, while broad, Entertainment may not be a good category to choose from because there are over 241 counts in this category.

The solution created for this question was a procedure that counts the number of categories from the YoutuberInfo table. The results given are the counts of how many youtubers create content in this category per the data set used from Kaggle. Using our prior knowledge of PL/SQL procedures, we created a query that will use a for loop to select the categories from each row and create a list of the different categories along with the count of the times it occurs. Since it is a procedure, we run the code by execution. The DBMS outputs the category and the count in a list.

Solution:
```
CREATE OR REPLACE PROCEDURE GetCategoryCounts AS
BEGIN
  FOR category_rec IN (SELECT category, COUNT(*) AS category_count
            FROM youtuberinfo
            GROUP BY category
            ORDER BY category_count DESC)
  LOOP
    DBMS_OUTPUT.PUT_LINE('Category: ' || category_rec.category);
    DBMS_OUTPUT.PUT_LINE('Count: ' || category_rec.category_count);
    DBMS_OUTPUT.PUT_LINE('');
  END LOOP;
END GetCategoryCounts;
/

EXEC GetCategoryCounts;
```

Results:
Category: Entertainment
Count: 241
Category: Music
Count: 202

Category: People & Blogs
Count: 132
Category: Gaming
Count: 94
Category: Comedy
Count: 69
Category: Film & Animation
Count: 45
Category: Education
Count: 45
Category: Howto & Style
Count: 40
Category:
Count: 39
Category: News & Politics
Count: 26
Category: Science & Technology
Count: 17
Category: Shows
Count: 13
Category: Sports
Count: 11
Category: Pets & Animals
Count: 4
Category: Trailers
Count: 2
Category: Autos & Vehicles
Count: 2
Category: Nonprofits & Activism
Count: 2
Category: Movies
Count: 2
Category: Travel & Events
Count: 1

Question 2:

For each country, what is the most (and least) popular genre or category for channel content?

       This question is important because as a content creator, growth can be achieved much faster if you know what topic and/or genre is most popular in your area or country at large. The categories provide information regarding the preferences for the general viewer. Listing the categories for a specified country will allow a new content creator to specifically cater to a greater audience. While there are some common categories with multiple countries, it is still beneficial information to gauge and base the new youtube channel on those targeted audiences.

       For this solution we created a procedure called FindPopularGenres with a loop to sort through the YoutuberInfo table and find the most and least popular genre based on those youtubers in the data set used from Kaggle. From our previous knowledge of PL/SQL Procedures, to create two variables, most_popular_category and least_popular_category, to store the data found from the table query. The program will loop through each distinct country to find the most and least popular genre. The solution also gives a DBMS output that displays the country and the two created variables in a column, separating each country's data with dashes.

Solution:
```
CREATE OR REPLACE PROCEDURE FindPopularGenres AS
BEGIN
  FOR country_rec IN (SELECT DISTINCT country FROM YOUTUBERINFO)
  LOOP

    DECLARE
      most_popular_category VARCHAR2(255);
      least_popular_category VARCHAR2(255);
    BEGIN

      SELECT category
      INTO most_popular_category
      FROM YOUTUBERINFO
      WHERE Country = country_rec.Country
      ORDER BY uploads DESC
      FETCH FIRST 1 ROWS ONLY;

      SELECT category
      INTO least_popular_category
      FROM YOUTUBERINFO
      WHERE country = country_rec.country
      ORDER BY uploads ASC
      FETCH FIRST 1 ROWS ONLY;
```

```
        DBMS_OUTPUT.PUT_LINE('Country: ' || country_rec.Country);
        DBMS_OUTPUT.PUT_LINE('Most Popular Category: ' || most_popular_category);
        DBMS_OUTPUT.PUT_LINE('Least Popular Category: ' || least_popular_category);
        DBMS_OUTPUT.PUT_LINE('--------------------------');
    EXCEPTION
        WHEN NO_DATA_FOUND THEN
            DBMS_OUTPUT.PUT_LINE('No data found for Country: ' || country_rec.Country);
            DBMS_OUTPUT.PUT_LINE('--------------------------');
        END;
    END LOOP;
END FindPopularGenres;

EXECUTE FINDPOPULARGENRES;
```

Results:

Country: United States
Most Popular Category: Nonprofits & Activism
Least Popular Category: Film & Animation

Country: Indonesia
Most Popular Category: News & Politics
Least Popular Category: Entertainment

Country: Thailand
Most Popular Category: News & Politics
Least Popular Category: Music

Country: Saudi Arabia
Most Popular Category: Gaming
Least Popular Category: Entertainment

Country: Bangladesh
Most Popular Category: News & Politics
Least Popular Category: News & Politics

Country: Finland
Most Popular Category: Gaming
Least Popular Category: Gaming

Country: Brazil
Most Popular Category: Entertainment
Least Popular Category: Music

Country: Argentina
Most Popular Category: Gaming
Least Popular Category: Music

Country: South Korea
Most Popular Category: Entertainment
Least Popular Category: Music

Country: Malaysia
Most Popular Category: Film & Animation
Least Popular Category: Film & Animation

Country: Morocco
Most Popular Category: Music
Least Popular Category: Music

Country: Russia
Most Popular Category: Gaming
Least Popular Category: People & Blogs

Country: Spain
Most Popular Category: Gaming
Least Popular Category: Entertainment

Country: Iraq
Most Popular Category: Music
Least Popular Category: Comedy

Country: Japan
Most Popular Category: Entertainment
Least Popular Category: Entertainment

Country: Barbados
Most Popular Category: Entertainment
Least Popular Category: Entertainment

Country: Venezuela
Most Popular Category: People & Blogs
Least Popular Category: People & Blogs

Country: Netherlands
Most Popular Category: Music
Least Popular Category: Howto & Style

Country: Singapore
Most Popular Category: Entertainment
Least Popular Category: People & Blogs

Country: Italy
Most Popular Category: Entertainment
Least Popular Category: Entertainment

Country: Egypt
Most Popular Category: Howto & Style
Least Popular Category: People & Blogs

Country: Chile
Most Popular Category: Gaming
Least Popular Category: Gaming

Country: Germany
Most Popular Category: Entertainment
Least Popular Category: Comedy

Country: Latvia
Most Popular Category: Comedy
Least Popular Category: Comedy

Country: France
Most Popular Category: Gaming
Least Popular Category: People & Blogs

Country: Cuba
Most Popular Category: Gaming
Least Popular Category: Gaming

Country: Peru
Most Popular Category: Entertainment
Least Popular Category: Entertainment

Country: Samoa
Most Popular Category: Music
Least Popular Category: Music

Country: Mexico
Most Popular Category: People & Blogs
Least Popular Category: Comedy

No data found for Country:

Country: Afghanistan
Most Popular Category: Music
Least Popular Category: Music

Country: Ukraine
Most Popular Category: News & Politics
Least Popular Category: Entertainment

Country: Vietnam
Most Popular Category: Music
Least Popular Category: Entertainment

Country: El Salvador
Most Popular Category: Gaming
Least Popular Category: Gaming

Country: Pakistan
Most Popular Category: News & Politics
Least Popular Category:

Country: Australia
Most Popular Category: Gaming
Least Popular Category: Gaming

Country: Kuwait
Most Popular Category: Gaming
Least Popular Category: Gaming

Country: Philippines
Most Popular Category: News & Politics
Least Popular Category:

Country: Sweden
Most Popular Category:
Least Popular Category: Gaming

Country: Canada
Most Popular Category: Music
Least Popular Category: Gaming

Country: China
Most Popular Category: Howto & Style

Least Popular Category: Howto & Style

Country: Jordan

Most Popular Category: Entertainment

Least Popular Category: Music

Country: Andorra

Most Popular Category: Howto & Style

Least Popular Category: Howto & Style

Country: Ecuador

Most Popular Category: People & Blogs

Least Popular Category: Entertainment

Country: United Arab Emirates

Most Popular Category: People & Blogs

Least Popular Category: Gaming

Country: India

Most Popular Category: People & Blogs

Least Popular Category: Entertainment

Country: United Kingdom

Most Popular Category: News & Politics

Least Popular Category: Howto & Style

Country: Colombia

Most Popular Category: Music

Least Popular Category: Music

Country: Turkey

Most Popular Category: Music

Least Popular Category: Entertainment

Country: Switzerland

Most Popular Category: Sports

Least Popular Category: Sports

Question 3:

What are the top-ranked YouTubers for various countries, highlighting their respective categories or genres, that contribute to their popularity?

      The question allows a potential content creator to understand a bit more about which categories are most popular in a country. Also, we can understand more based on the top ranked YouTubers. The new creator could find out who the top creators are and do further research such as watching their videos. Another unique feature of this question is that the content creator could specifically look for their country or target their audience in a country who may prefer the category that the new content creator makes.

      We used a procedure called "topRanked" to list the YouTuber name, the country, and the channel type from the channel_stats table. This data then retrieves the rows where the rank_in_country attribute is equal to 1. It then loops through the dataset until no more rows are detected, then the loop ends. The results then list the youtuber, their country, and their channel type in a comfortably formatted manner

Solution:
```
create or replace procedure topRanked
as
begin
   for current_youtuber in (
   select channel_stats.youtuber, youtuberinfo.country, channel_type
   from channel_stats
   inner join youtuberinfo
   on channel_stats.youtuber = youtuberinfo.youtuber
   where rank_in_country = '1') loop
   dbms_output.put_line('Youtuber: ' || RPAD(current_youtuber.youtuber, 50) || ' Country: ' ||
RPAD(current_youtuber.country, 30) || ' Channel Type: ' || RPAD(current_youtuber.channel_type, 30));
   end loop;
end topRanked;
/

EXEC topRanked;
```

Results:
```
Youtuber: ýýýýýýýý ýýýýýýýý ýýýýýýýýýý | toyoraljanahtv     Country: Jordan              Channel Type: Music
Youtuber: Spinnin' Records                    Country: Netherlands         Channel Type: Music
Youtuber: Bounce Patrol - Kids Songs          Country: Australia           Channel Type: Music
Youtuber: PANDA BOI                           Country: Italy               Channel Type: Entertainment
Youtuber: Tsuriki Show                        Country: Germany             Channel Type: Comedy
Youtuber: mmoshaya                            Country: Saudi Arabia        Channel Type: Entertainment
Youtuber: SQUEEZIE                            Country: France              Channel Type: Entertainment
Youtuber: Like Nastya VNM                     Country: Vietnam             Channel Type: Entertainment
Youtuber: Les' Copaque Production             Country: Malaysia            Channel Type: Entertainment
Youtuber: ýýýýýýýý Liziqi                     Country: China               Channel Type: Howto
Youtuber: ýýýýýýýýýýýýýýý - Al-Remas           Country: Iraq                Channel Type: Music
Youtuber: LEGO                                Country: Singapore           Channel Type: Entertainment
Youtuber: ýýýýýýýý ýýýýýýýýýýýýýý ýýýý 5 ýýýýýýýýý     Country: Egypt               Channel Type: Howto
```

Youtuber: Doc Tops   Country: Ecuador   Channel Type: Entertainment
Youtuber: Saad Lamjarred | ï¿½ï¿½ï¿½ï¿½ï¿½ï¿   Country: Morocco   Channel Type: Music
Youtuber: Drawblogs   Country: Peru   Channel Type: Entertainment
Youtuber: Avicii   Country: Sweden   Channel Type: Music
Youtuber: SlivkiShow   Country: Ukraine   Channel Type: Entertainment
Youtuber: dednahype   Country: Latvia   Channel Type: Comedy
Youtuber: FIFA   Country: Switzerland   Channel Type: Sports
Youtuber: T-Series   Country: India   Channel Type: Music
Youtuber: MrBeast   Country: United States   Channel Type: Entertainment
Youtuber: PewDiePie   Country: Japan   Channel Type: Entertainment
Youtuber: BLACKPINK   Country: South Korea   Channel Type: Music
Youtuber: Justin Bieber   Country: Canada   Channel Type: Music
Youtuber: Canal KondZilla   Country: Brazil   Channel Type: Music
Youtuber: El Reino Infantil   Country: Argentina   Channel Type: Music
Youtuber: Ed Sheeran   Country: United Kingdom   Channel Type: Music
Youtuber: JuegaGerman   Country: Chile   Channel Type: Games
Youtuber: Get Movies   Country: Russia   Channel Type: Film
Youtuber: Fernanfloo   Country: El Salvador   Channel Type: Games
Youtuber: HAR PAL GEO   Country: Pakistan   Channel Type: Entertainment
Youtuber: ABS-CBN Entertainment   Country: Philippines   Channel Type: Entertainment
Youtuber: Shakira   Country: Colombia   Channel Type: Howto
Youtuber: Rihanna   Country: Barbados   Channel Type: Music
Youtuber: shfa2 - ï¿½ï¿½   Country: United Arab Emirates   Channel Type: People
Youtuber: Mikecrack   Country: Spain   Channel Type: Games
Youtuber: WorkpointOfficial   Country: Thailand   Channel Type: Entertainment
Youtuber: PowerKids TV   Country: Channel Type: Film
Youtuber: Jess No Limit   Country: Indonesia   Channel Type: Entertainment
Youtuber: BETER Bï¿½ï¿½   Country: Turkey   Channel Type: Games
Youtuber: AboFlah   Country: Kuwait   Channel Type: Entertainment
Youtuber: Brawl Stars   Country: Finland   Channel Type: Games

Question 4:

How do the average earnings of top YouTubers vary by country?

        In order for a YouTuber to increase their income, they may want to emulate the content of the top earners on the site and, more importantly, the YouTuber's country. The average earnings data allows a content creator to analyze their potential success depending on the country they are from. The analysis being performed on the top Youtubers highlights creators who may be sought after by new content creators due to their success in their category and country. This information is important as well because content creators may be wanting to move countries in the near future and their channel could potentially not be as successful in another country.

        The solution created for this question uses our previous knowledge of Procedures, Subqueries, DBMS Output lines, and variables. This procedure finds the average earnings of the top n youtubers in each country. If the procedure is executed without the number parameter, it will show the top 3 YouTubers by default. One parameter is required, the country name. Based on this country name, the procedure will find a list of the top YouTubers from that country. This procedure uses our knowledge of user defined variables, input parameters, subqueries, inner joins, loops, and basic arithmetic to compute a YouTubers ranking.

Solution:

```
create or replace procedure top5EachCountry(country_choice in varChar2, numrows in number)
as
        earnings number;
        lowest number;
        highest number;
begin
   for current_youtuber in(
   select youtuberinfo.youtuber, rank_in_country, youtuberinfo.country,
((channel_stats.lowest_yearly_earnings + channel_stats.highest_yearly_earnings)/2),
channel_stats.lowest_yearly_earnings, channel_stats.highest_yearly_earnings
   from youtuberinfo
   inner join channel_stats
   on youtuberinfo.youtuber = channel_stats.youtuber
   where rank_in_country <= numrows+1 AND youtuberinfo.country is not null AND
youtuberinfo.country = country_choice
   order by channel_stats.country, rank_in_country) loop
   lowest := current_youtuber.lowest_yearly_earnings;
   highest := current_youtuber.highest_yearly_earnings;
   earnings := (lowest + highest)/2;
   dbms_output.put_line('Youtuber: ' || RPAD(current_youtuber.youtuber, 50) || ' Country: ' ||
RPAD(current_youtuber.country, 30) || ' Channel Rank: ' || RPAD(earnings, 30));
   end loop;
```

```
end top5EachCountry;
/

exec top5EachCountry('India', 5);
```

Results:

Youtuber: T-Series   Country: India   Channel Rank: 57600000
Youtuber: SET India   Country: India   Channel Rank: 46500000
Youtuber: Zee Music Company   Country: India   Channel Rank: 20500000
Youtuber: Sony SAB   Country: India   Channel Rank: 42300000
Youtuber: Zee TV   Country: India   Channel Rank: 43500000

Question 5:

What is the average earnings for YouTubers per content category?

   Understanding the average earnings per content category will help inform youtubers about which content categories are most profitable. This will likely drive certain categories to be really popular when they go viral. This will also show which categories may go under represented in the algorithm, and have room for growth. This question can provide insight on what average earnings are for Youtubers for categories and what new content creators could potentially use in order to determine what their channel content may be.

   This procedure estimates average earnings for each YouTube category by adding all the category's lowest yearly earnings and the category's highest yearly earnings then dividing that number by the number of YouTubers in that category. Since this information is in different tables an inner join statement was used. This procedure uses group by functions to perform the calculations on each category. The result is grouped by category and ordered by average earnings in descending order. This procedure uses a cursor and a loop to display the results in the DBMS Output window.

Solution:
```
CREATE or REPLACE procedure CategoryAvgEarnings
as
   CURSOR All_Categories is
      select Category, sum(Lowest_yearly_earnings)+sum(highest_yearly_earnings)/(2*count(*)) as
    AvgEarnings, count(*) as NumInCategory
      from Channel_Stats STATS inner join YouTuberInfo INFO
      on STATS.Youtuber = INFO.YouTuber
      group by Category
      order by AvgEarnings desc;
begin
   DBMS_OUTPUT.PUT(RPAD('Category', 25, ' '));
   DBMS_OUTPUT.PUT(LPAD('AvgEarnings', 15, ' '));
   DBMS_OUTPUT.PUT_LINE(RPAD(' NumInCategory', 15, ' '));
   DBMS_OUTPUT.PUT(RPAD('-', 24, '-'));
   DBMS_OUTPUT.PUT(RPAD(' ', 16, '-'));
   DBMS_OUTPUT.PUT_LINE(RPAD(' ', 15, '-'));

   for current_category in All_Categories LOOP
      DBMS_OUTPUT.PUT(RPAD(nvl(current_category.Category, 'N/A'), 20, ' '));
      DBMS_OUTPUT.PUT(LPAD(to_char(current_category.AvgEarnings, '$999,999,999,999'),20,' '));
      DBMS_OUTPUT.PUT_LINE(LPAD(current_category.NumInCategory, 12, ' '));
   end LOOP;
end CategoryAvgEarnings;
/
```

execute CategoryAvgEarnings;

Results:

```
Category                 AvgEarnings NumInCategory
------------------------ -------------- --------------
Shows                    $12,955,381     13
N/A                      $7,402,073      39
Autos & Vehicles         $6,994,875      2
Sports                   $5,109,023      11
Pets & Animals           $5,091,696      4
Film & Animation         $4,776,213      45
Education                $4,421,939      45
Comedy                   $4,269,795      69
News & Politics          $4,095,717      26
Entertainment            $3,975,413      241
Music                    $3,529,024      202
People & Blogs           $3,484,644      132
Movies                   $2,895,525      2
Nonprofits & Activism     $2,496,375     2
Trailers                 $2,310,700      2
Gaming                   $1,727,601      94
Science & Technology      $1,283,507     17
Howto & Style            $1,230,536      40
Travel & Events          $796,500        1
```

Question 6:

What is the gross income of the most popular genres in each country based on population?

       This question is important because a potential Youtube content creator could make a comparison of gross income in each country based on popular genres. It is important to analyze this data to look at potential income for new channels created in a country. New content creators can also look how much income they would be earning in a country based on the population. Some countries like Kuwait average $1.80 per person in a country whereas Afghanistan is showing $0 per person (this is actually false, but the income made per capita is such a large disparity that it's showing as 0 in the results). This information is important to analyze when starting a Youtube channel because it's important to understand what the most popular categories are and what income a content creator would make based on the population in the country. A country with a much smaller population could potentially show better average earnings per population, but the channel overall could make less money than a channel in another country.

       The solution created for this question was using our previous knowledge of Procedures, Inner Joins, Subqueries, and DBMS Output lines. The procedure created used some code from Question 2 in order to find the most popular category in each country. Once each category is found, we need to find the income per capita by taking the sum of the highest yearly earnings and dividing it by the sum of the population for each country. The results are displayed in alphabetical order of each country with up to 7 decimal points on the capita variable in order to get the best data possible.

Solution:
```
CREATE OR REPLACE PROCEDURE IncomePerCapita AS
    average_income_capita NUMBER;
    most_popular_category VARCHAR2(255);
BEGIN
    FOR country_rec IN (SELECT DISTINCT Country FROM YOUTUBERINFO ORDER BY country)
    LOOP
    BEGIN
        SELECT category
        INTO most_popular_category
        FROM YOUTUBERINFO
        WHERE Country = country_rec.country
        ORDER BY uploads DESC, category ASC
        FETCH FIRST 1 ROWS ONLY;

        SELECT (SUM(channel_stats.highest_yearly_earnings)/SUM(countrystats.population))
        INTO average_income_capita
        FROM YOUTUBERINFO
        INNER JOIN COUNTRYSTATS ON youtuberinfo.country = countrystats.country
        INNER JOIN CHANNEL_STATS ON youtuberinfo.youtuber = channel_stats.youtuber
        WHERE youtuberinfo.country = country_rec.country AND youtuberinfo.category =
        most_popular_category;
```

```
          DBMS_OUTPUT.PUT_LINE('Country: ' || country_rec.Country);
          DBMS_OUTPUT.PUT_LINE('Most Popular Category: ' || most_popular_category);
          DBMS_OUTPUT.PUT_LINE('Average Income Per Capita: ' || to_char(average_income_capita,
          '$99999.9999999'));
          DBMS_OUTPUT.PUT_LINE('--------------------------');
      EXCEPTION
          WHEN NO_DATA_FOUND THEN
              DBMS_OUTPUT.PUT_LINE('No data found for Country: ' || country_rec.Country);
              DBMS_OUTPUT.PUT_LINE('--------------------------');
          WHEN ZERO_DIVIDE THEN
              DBMS_OUTPUT.PUT_LINE('No population or earnings were found for this country: ' ||
      country_rec.Country);
                  DBMS_OUTPUT.PUT_LINE('--------------------------');

      END;
END LOOP;
END IncomePerCapita;

EXECUTE IncomePerCapita;
```

Results:
Country: Afghanistan
Most Popular Category: Music
Average Income Per Capita: $.0000000

Country: Andorra
Most Popular Category: Howto & Style
Average Income Per Capita: $.0000506

Country: Argentina
Most Popular Category: Gaming
Average Income Per Capita: $.0689828

Country: Australia
Most Popular Category: Gaming
Average Income Per Capita: $.0297543

Country: Bangladesh
Most Popular Category: News & Politics
Average Income Per Capita: $.0000000

Country: Barbados
Most Popular Category: Entertainment

Average Income Per Capita: $30.6593502

Country: Brazil

Most Popular Category: Entertainment

Average Income Per Capita: $.0134927

Country: Canada

Most Popular Category: Music

Average Income Per Capita: $.1789577

Country: Chile

Most Popular Category: Gaming

Average Income Per Capita: $.1407061

Country: China

Most Popular Category: Howto & Style

Average Income Per Capita: $.0007870

Country: Colombia

Most Popular Category: Music

Average Income Per Capita: $.1943946

Country: Cuba

Most Popular Category: Gaming

Average Income Per Capita: $.0000004

Country: Ecuador

Most Popular Category: People & Blogs

Average Income Per Capita: $.1726752

Country: Egypt

Most Popular Category: Howto & Style

Average Income Per Capita: $.0159381

Country: El Salvador

Most Popular Category: Gaming

Average Income Per Capita: $.2479254

Country: Finland

Most Popular Category: Gaming

Average Income Per Capita: $.1771095

Country: France

Most Popular Category: Gaming

Average Income Per Capita: $.0342977

Country: Germany

Most Popular Category: Entertainment

Average Income Per Capita: $.3963538

Country: India

Most Popular Category: People & Blogs

Average Income Per Capita: $.0086602

Country: Indonesia

Most Popular Category: News & Politics

Average Income Per Capita: $.0199849

Country: Iraq

Most Popular Category: Music

Average Income Per Capita: $.1373704

Country: Italy

Most Popular Category: Entertainment

Average Income Per Capita: $.4991924

Country: Japan

Most Popular Category: Entertainment

Average Income Per Capita: $.1814201

Country: Jordan

Most Popular Category: Entertainment

Average Income Per Capita: $.4850672

Country: Kuwait

Most Popular Category: Gaming

Average Income Per Capita: $1.8064773

Country: Latvia

Most Popular Category: Comedy

Average Income Per Capita: $31.2632496

Country: Malaysia

Most Popular Category: Film & Animation

Average Income Per Capita: $.1756690

Country: Mexico

Most Popular Category: People & Blogs

Average Income Per Capita: $.0162505

Country: Morocco
Most Popular Category: Music
Average Income Per Capita: $.0487665

Country: Netherlands
Most Popular Category: Music
Average Income Per Capita: $.2769308

Country: Pakistan
Most Popular Category: News & Politics
Average Income Per Capita: $.0221642

Country: Peru
Most Popular Category: Entertainment
Average Income Per Capita: $.0014795

Country: Philippines
Most Popular Category: News & Politics
Average Income Per Capita: $.0678280

Country: Russia
Most Popular Category: Gaming
Average Income Per Capita: $.0314000

Country: Samoa
Most Popular Category: Music
Average Income Per Capita: $.0000889

Country: Saudi Arabia
Most Popular Category: Gaming
Average Income Per Capita: $.0802486

Country: Singapore
Most Popular Category: Entertainment
Average Income Per Capita: $.9818414

Country: South Korea
Most Popular Category: Entertainment
Average Income Per Capita: $.0631311

Country: Spain
Most Popular Category: Gaming

Average Income Per Capita: $.0669813

Country: Sweden
Most Popular Category:
Average Income Per Capita:

Country: Switzerland
Most Popular Category: Sports
Average Income Per Capita: $.3265370

Country: Thailand
Most Popular Category: News & Politics
Average Income Per Capita: $.1551154

Country: Turkey
Most Popular Category: Music
Average Income Per Capita: $.2445175

Country: Ukraine
Most Popular Category: News & Politics
Average Income Per Capita: $.4010350

Country: United Arab Emirates
Most Popular Category: People & Blogs
Average Income Per Capita: $.8085540

Country: United Kingdom
Most Popular Category: News & Politics
Average Income Per Capita: $.0478795

Country: United States
Most Popular Category: Nonprofits & Activism
Average Income Per Capita: $.0067024

Country: Venezuela
Most Popular Category: People & Blogs
Average Income Per Capita: $.0000060

Country: Vietnam
Most Popular Category: Music
Average Income Per Capita: $.1275112

No data found for Country:

Question 7:

What is the gross income of the least popular genres in each country?

       The inquiry involves comparing the gross income of the least popular genres on YouTube in each country which provides insightful data for creators. It establishes a baseline for the minimum exposure and engagement creators can expect, which helps for content planning and expectations. Pairing this information with earnings from the least popular, creators can use this information to identify areas or categories for growth. This information is also important because a new creator can analyze both the least and most popular genres and what type of income can be expected.

       The solution created for this question was using our previous knowledge of Procedures, Inner Joins, Subqueries, and DBMS Output lines. The procedure created used most of the code from Question 6 in order to find the least popular category in each country. Once each category is found, we need to find the income per capita by taking the sum of the lowest yearly earnings and dividing it by the sum of the population for each country. The results are displayed in alphabetical order of each country with up to 7 decimal points on the capita variable in order to get the best data possible.

Solution:

```
CREATE OR REPLACE PROCEDURE LeastIncomePerCapita AS
    average_income_capita NUMBER;
    least_popular_category VARCHAR2(255);
BEGIN
  FOR country_rec IN (SELECT DISTINCT Country FROM YOUTUBERINFO ORDER BY country)
  LOOP
  BEGIN
      SELECT category
      INTO least_popular_category
      FROM YOUTUBERINFO
      WHERE Country = country_rec.country
      ORDER BY uploads ASC, category DESC
      FETCH FIRST 1 ROWS ONLY;

      SELECT (SUM(channel_stats.lowest_yearly_earnings)/SUM(countrystats.population))
      INTO average_income_capita
      FROM YOUTUBERINFO
      INNER JOIN COUNTRYSTATS ON youtuberinfo.country = countrystats.country
      INNER JOIN CHANNEL_STATS ON youtuberinfo.youtuber = channel_stats.youtuber
      WHERE youtuberinfo.country = country_rec.country AND youtuberinfo.category =
least_popular_category;

      DBMS_OUTPUT.PUT_LINE('Country: ' || country_rec.Country);
      DBMS_OUTPUT.PUT_LINE('Least Popular Category: ' || least_popular_category);
```

```
        DBMS_OUTPUT.PUT_LINE('Average Income Per Capita: ' || to_char(average_income_capita,
'$99999.9999999'));
        DBMS_OUTPUT.PUT_LINE('--------------------------');
    EXCEPTION
        WHEN NO_DATA_FOUND THEN
            DBMS_OUTPUT.PUT_LINE('No data found for Country: ' || country_rec.Country);
            DBMS_OUTPUT.PUT_LINE('--------------------------');
        WHEN ZERO_DIVIDE THEN
            DBMS_OUTPUT.PUT_LINE('No population or earnings were found for this country: ' ||
country_rec.Country);
            DBMS_OUTPUT.PUT_LINE('--------------------------');

    END;
END LOOP;
END LeastIncomePerCapita;
/

exec LeastIncomePerCapita;
```

Solution:
```
Country: Afghanistan
Least Popular Category: Music
Average Income Per Capita:      $.0000000
--------------------------
Country: Andorra
Least Popular Category: Howto & Style
Average Income Per Capita:      $.0000033
--------------------------
Country: Argentina
Least Popular Category: Music
Average Income Per Capita:      $.0162605
--------------------------
Country: Australia
Least Popular Category: Gaming
Average Income Per Capita:      $.0018292
--------------------------
Country: Bangladesh
Least Popular Category: News & Politics
Average Income Per Capita:      $.0000000
--------------------------
Country: Barbados
Least Popular Category: Entertainment
Average Income Per Capita:      $1.9120286
--------------------------
```

Country: Brazil
Least Popular Category: Music
Average Income Per Capita: $.0026448

Country: Canada
Least Popular Category: Gaming
Average Income Per Capita: $.0018835

Country: Chile
Least Popular Category: Gaming
Average Income Per Capita: $.0087906

Country: China
Least Popular Category: Howto & Style
Average Income Per Capita: $.0000480

Country: Colombia
Least Popular Category: Music
Average Income Per Capita: $.0121609

Country: Cuba
Least Popular Category: Gaming
Average Income Per Capita: $.0000000

Country: Ecuador
Least Popular Category: Entertainment
Average Income Per Capita: $.0028319

Country: Egypt
Least Popular Category: People & Blogs
Average Income Per Capita: $.0013767

Country: El Salvador
Least Popular Category: Gaming
Average Income Per Capita: $.0157278

Country: Finland
Least Popular Category: Gaming
Average Income Per Capita: $.0110682

Country: France
Least Popular Category: People & Blogs
Average Income Per Capita: $.0000000

Country: Germany
Least Popular Category: Comedy
Average Income Per Capita: $.0000000

Country: India
Least Popular Category: Entertainment
Average Income Per Capita: $.0005415

Country: Indonesia
Least Popular Category: Entertainment
Average Income Per Capita: $.0009474

Country: Iraq
Least Popular Category: Comedy
Average Income Per Capita: $.0026965

Country: Italy
Least Popular Category: Entertainment
Average Income Per Capita: $.0314242

Country: Japan
Least Popular Category: Entertainment
Average Income Per Capita: $.0113553

Country: Jordan
Least Popular Category: Music
Average Income Per Capita: $.0502094

Country: Kuwait
Least Popular Category: Gaming
Average Income Per Capita: $.1125958

Country: Latvia
Least Popular Category: Comedy
Average Income Per Capita: $1.9343482

Country: Malaysia
Least Popular Category: Film & Animation
Average Income Per Capita: $.0108853

Country: Mexico
Least Popular Category: Entertainment
Average Income Per Capita: $.0014314

Country: Morocco
Least Popular Category: Music
Average Income Per Capita: $.0030533

Country: Netherlands
Least Popular Category: Howto & Style
Average Income Per Capita: $.0062194

Country: Pakistan
Least Popular Category:
Average Income Per Capita:

Country: Peru
Least Popular Category: Entertainment
Average Income Per Capita: $.0000923

Country: Philippines
Least Popular Category:
Average Income Per Capita:

Country: Russia
Least Popular Category: People & Blogs
Average Income Per Capita: $.0032364

Country: Samoa
Least Popular Category: Music
Average Income Per Capita: $.0000049

Country: Saudi Arabia
Least Popular Category: Entertainment
Average Income Per Capita: $.0002150

Country: Singapore
Least Popular Category: People & Blogs
Average Income Per Capita: $.0000000

Country: South Korea
Least Popular Category: Music
Average Income Per Capita: $.0107613

Country: Spain
Least Popular Category: Entertainment
Average Income Per Capita: $.0002245

Country: Sweden
Least Popular Category: Gaming
Average Income Per Capita: $.0011278

Country: Switzerland
Least Popular Category: Sports
Average Income Per Capita: $.0205952

Country: Thailand
Least Popular Category: Music
Average Income Per Capita: $.0037552

Country: Turkey
Least Popular Category: Entertainment
Average Income Per Capita: $.0020718

Country: Ukraine
Least Popular Category: Entertainment
Average Income Per Capita: $.0023274

Country: United Arab Emirates
Least Popular Category: Gaming
Average Income Per Capita: $.0246148

Country: United Kingdom
Least Popular Category: Howto & Style
Average Income Per Capita: $.0000000

Country: United States
Least Popular Category: Science & Technology
Average Income Per Capita: $.0003553

Country: Venezuela
Least Popular Category: People & Blogs
Average Income Per Capita: $.0000004

Country: Vietnam
Least Popular Category: Entertainment
Average Income Per Capita: $.0026269

No data found for Country:

Question 8:

What is the impact of video frequency (number of uploads) and the number of subscribers for YouTubers in specific categories?

       Evaluating the number of uploads for a YouTube channel would help to provide insight to how frequently a content creator should upload videos in order to gain popularity and subscribers. Comparing the number of uploads in a channel to the number of subscribers will allow us to see the correlations or insights to what a reasonable amount of uploads for a growing channel should be. The relationship between video uploads and subscriber count offers valuable insights for creators who are trying to build a loyal audience. This information can offer a guide to content creators determining their posting schedule to foster a more consistent subscriber count and therefore channel success.

       Our solution utilized a procedure called "ContentRatio" where we joined the YouTuberInfo table and the channel_stats table. We used an inner join to select the "category" column for all of the rows. Then, we also added a calculation where the number of uploads divided by the number of subscribers in order to create a solution to quantify the "influence" of a channel. The "influence" is based on how many videos have been published along with the number of subscribers. The For Loop iterates through the data, calculating the ratio for each YouTube channel and outputs the YouTuber name and the calculated ratio.

Solution:
```
CREATE OR REPLACE PROCEDURE contentratio (
    usergenre IN VARCHAR2
) AS
BEGIN
  FOR current_youtuber IN (
    SELECT
        youtuberinfo.youtuber,
        category,
        ( uploads / subscribers ) AS ratio
    FROM
          youtuberinfo
        INNER JOIN channel_stats ON youtuberinfo.youtuber = channel_stats.youtuber
    WHERE
        category = usergenre
  ) LOOP
    dbms_output.put_line('Youtuber: '
                || rpad(current_youtuber.youtuber, 50)
                || 'Ratio: '
                || rpad(round(current_youtuber.ratio, 10), 50));
  END LOOP;
END contentratio;

exec contentratio('Gaming');
```

Results:

Youtuber: FFUNTV   Ratio: 747.6453835714
Youtuber: Mobile Legends: Bang Bang   Ratio: 100.234291039
Youtuber: LOKESH GAMER   Ratio: 107.1946441176
Youtuber: Makiman131   Ratio: 280.5321947682
Youtuber: EdisonPts   Ratio: 441.6230368212
Youtuber: MoreAliA   Ratio: 290.1618032667
Youtuber: League of Legends   Ratio: 477.3167313333
Youtuber: PlayStation   Ratio: 316.095628
Youtuber: Kwebbelkop   Ratio: 459.2869537333
Youtuber: BigSchool   Ratio: 666.4088710667
Youtuber: TazerCraft   Ratio: 399.7445368456
Youtuber: Lachlan   Ratio: 356.0175293919
Youtuber: Jesser   Ratio: 246.8189182877
Youtuber: PrestonPlayz   Ratio: 394.9758230822
Youtuber: Gyan Gamingï¿½   Ratio: 154.4529090278
Youtuber: NOBRU   Ratio: 24.4280086111
Youtuber: TommyInnit   Ratio: 146.8162779577
Youtuber: E-MasterSensei   Ratio: 276.0957430986
Youtuber: PewDiePie   Ratio: 261.7841842072
Youtuber: JuegaGerman   Ratio: 304.1935611019
Youtuber: A4   Ratio: 495.3915942333
Youtuber: Fernanfloo   Ratio: 223.9347417137
Youtuber: elrubiusOMG   Ratio: 183.4291254455
Youtuber: Mikecrack   Ratio: 412.2297103069
Youtuber: MrBeast Gaming   Ratio: 175.3831730471
Youtuber: Total Gaming   Ratio: 156.9594415254
Youtuber: Markiplier   Ratio: 576.645773267
Youtuber: Techno Gamerz   Ratio: 281.7005716279
Youtuber: VEGETTA777   Ratio: 456.5955385799
Youtuber: SSSniperWolf   Ratio: 697.1122972997
Youtuber: rezendeevil   Ratio: 406.9077806231
Youtuber: Dream   Ratio: 92.4295072871
Youtuber: AboFlah   Ratio: 148.2483258689
Youtuber: Frost Diamond   Ratio: 241.777207309
Youtuber: jacksepticeye   Ratio: 539.7550111628
Youtuber: DanTDM   Ratio: 708.6820259124
Youtuber: VanossGaming   Ratio: 602.3806913953
Youtuber: Preston   Ratio: 344.9585184167
Youtuber: Ninja   Ratio: 107.3337533333
Youtuber: FaZe Rug   Ratio: 314.4216089451
Youtuber: Jelly   Ratio: 628.8099805532
Youtuber: SSundee   Ratio: 614.8965924889

Youtuber: FGTeeV   Ratio: 1078.8940294619
Youtuber: invictor   Ratio: 391.1461266047
Youtuber: LazarBeam   Ratio: 427.7413296098
Youtuber: MiawAug   Ratio: 301.9130982178
Youtuber: AuthenticGames   Ratio: 443.7881264677
Youtuber: AS Gaming   Ratio: 145.460430102
Youtuber: Clash of Clans   Ratio: 202.1080835714
Youtuber: Ali-A   Ratio: 328.786271016
Youtuber: ýýýýýýýý ýýýýýýýýýý ýýýýýýýýýý | Arab Games NetworRatio: 471.0352446237
Youtuber: Marmok   Ratio: 186.8982897838
Youtuber: IShowSpeed   Ratio: 85.0274884699
Youtuber: SQUEEZIE   Ratio: 551.5505570718
Youtuber: TheGrefg   Ratio: 355.8251131667
Youtuber: zbing z.   Ratio: 526.6576176136
Youtuber: The Game Theorists   Ratio: 213.2015489773
Youtuber: DeGoBooM   Ratio: 358.3070776136
Youtuber: IGN   Ratio: 920.4066599429
Youtuber: Aphmau   Ratio: 1020.8957748851
Youtuber: PopularMMOs   Ratio: 847.2765057558
Youtuber: Willyrex   Ratio: 292.098194593
Youtuber: Guava Juice   Ratio: 539.1124395266
Youtuber: CoryxKenshin   Ratio: 425.3272826946
Youtuber: Technoblade   Ratio: 101.6228560736
Youtuber: W2S   Ratio: 292.5380652761
Youtuber: JJ Olatunji   Ratio: 251.6476927778
Youtuber: Antrax   Ratio: 189.36705675
Youtuber: Enes Batur   Ratio: 611.6622044375
Youtuber: Lyna   Ratio: 410.963925283
Youtuber: Unspeakable   Ratio: 569.3312926415
Youtuber: Kuplinov ï¿½ï¿½ï¿   Ratio: 439.9057317949
Youtuber: AM3NlC   Ratio: 354.28448
Youtuber: ýýýýýýýýýýý   Ratio: 551.4102222857
Youtuber: Jazzghost   Ratio: 408.1545153237
Youtuber: ýýýýýýýý/Atro   Ratio: 179.7795421739
Youtuber: Desi Gamers   Ratio: 155.8536670803
Youtuber: Acenix   Ratio: 156.0339717647
Youtuber: BUDI01 GAMING   Ratio: 87.5031444444
Youtuber: Typical Gamer   Ratio: 318.6356748148
Youtuber: H2ODelirious   Ratio: 325.1258370149
Youtuber: theRadBrad   Ratio: 454.8949446617
Youtuber: penguinz0   Ratio: 584.4769630827
Youtuber: BanderitaX   Ratio: 310.4698808271
Youtuber: AzzyLand   Ratio: 482.1288398496
Youtuber: Brawl Stars   Ratio: 154.2733634848

Youtuber: GH'S   Ratio: 672.2442037692
Youtuber: Piuzinho   Ratio: 85.1406269291
Youtuber: Morgz   Ratio: 262.1901039683
Youtuber: Yair17   Ratio: 112.16338624
Youtuber: LOUD   Ratio: 193.0760693548
Youtuber: Timba Vk   Ratio: 229.0433854839
Youtuber: DaniRep | +6 Vï¿½ï¿½ï¿½ï¿½ï¿½ï¿½ï¿½ï¿½ï¿½ï   Ratio: 559.1662020968
Youtuber: RobTopGames   Ratio: 30.4165433333

Question 9:

How much income is being generated per each viewer for the top Youtubers in each country?
(In other words, How much income does each viewer contribute to the content creator's income?)

   This can give us insight on expected earning for each viewer and the effects of losing viewers and how much income loss would be generated. This can also help us estimate total earnings for each youtuber according to how many total video views their channel got each month. It will also show any correlation between channel size and income generated per view. This will also show what countries have the highest earning individuals compared to others. Based on this information, a new Youtube content creator could analyze and determine what genres would generate the most income for a potential channel based on income of other Youtubers.

   The solution created for this question was using our previous knowledge of Procedures, Inner Joins, Subqueries, and DBMS Output lines. The procedure created used some code from Question 3 in order to find the first ranked Youtuber in each country. Once the highest ranked Youtuber is found, we need to find the income ratio by adding the highest and lowest yearly earnings, dividing by 2, and dividing by video views to find the capita per each video, The results are displayed with up to 7 decimal points on the capita in order to get the best data possible. This procedure iterates through a loop and performs math calculations based on the data available for each youtuber provided from the data set.

Solution:
```
CREATE OR REPLACE PROCEDURE toprankedratio AS
BEGIN
  FOR current_youtuber IN (
    SELECT
      channel_stats.youtuber,
      youtuberinfo.country,
      channel_type,
      ( ( highest_yearly_earnings + lowest_yearly_earnings ) / 2 ) / video_views AS ratio
    FROM
        channel_stats
      INNER JOIN youtuberinfo ON channel_stats.youtuber = youtuberinfo.youtuber
    WHERE
      rank_in_country = '1'
  ) LOOP
    dbms_output.put_line('Youtuber: '
              || rpad(current_youtuber.youtuber, 50)
              || '
Country: '
              || rpad(current_youtuber.country, 30)
              || '
Ratio: '
              || rpad(to_char(current_youtuber.ratio, '$999.9999999'), 30));
```

```
      END LOOP;
END toprankedratio;


EXEC TOPRANKEDRATIO;
```

Results:
Youtuber: ýýýýýýýý ýýýýýýýýýýýýý ýýýý 5 ýýýýýýýýý
    Country: Egypt
    Ratio: $.0001888
Youtuber: Doc Tops
    Country: Ecuador
    Ratio: $.0001601
Youtuber: Saad Lamjarred | ï¿½ï¿½ï¿½ï¿½ï¿½ï¿
    Country: Morocco
    Ratio: $.0002216
Youtuber: Drawblogs
    Country: Peru
    Ratio: $.0000157
Youtuber: T-Series
    Country: India
    Ratio: $.0002526
Youtuber: MrBeast
    Country: United States
    Ratio: $.0012108
Youtuber: PewDiePie
    Country: Japan
    Ratio: $.0000347
Youtuber: BLACKPINK
    Country: South Korea
    Ratio: $.0003951
Youtuber: Justin Bieber
    Country: Canada
    Ratio: $.0001475
Youtuber: Canal KondZilla
    Country: Brazil
    Ratio: $.0000000
Youtuber: El Reino Infantil
    Country: Argentina
    Ratio: $.0002724
Youtuber: Ed Sheeran
    Country: United Kingdom
    Ratio: $.0001697
Youtuber: JuegaGerman

Country: Chile
Ratio: $.0001162
Youtuber: Get Movies
Country: Russia
Ratio: $.0002537
Youtuber: Fernanfloo
Country: El Salvador
Ratio: $.0000824
Youtuber: HAR PAL GEO
Country: Pakistan
Ratio: $.0008289
Youtuber: ABS-CBN Entertainment
Country: Philippines
Ratio: $.0000898
Youtuber: Shakira
Country: Colombia
Ratio: $.0003283
Youtuber: Rihanna
Country: Barbados
Ratio: $.0002080
Youtuber: shfa2 - ï¿½ï¿½
Country: United Arab Emirates
Ratio: $.0002647
Youtuber: Mikecrack
Country: Spain
Ratio: $.0004185
Youtuber: WorkpointOfficial
Country: Thailand
Ratio: $.0000926
Youtuber: PowerKids TV
Country:
Ratio: $.0004287
Youtuber: Jess No Limit
Country: Indonesia
Ratio: $.0035201
Youtuber: BETER Bï¿½ï¿½
Country: Turkey
Ratio: $.0019447
Youtuber: AboFlah
Country: Kuwait
Ratio: $.0008928
Youtuber: ýýýýýýý ýýýýýýý ýýýýýýýýý | toyoraljanahtv
Country: Jordan
Ratio: $.0001074

Youtuber: Spinnin' Records
   Country: Netherlands
   Ratio: $.0001301
Youtuber: Bounce Patrol - Kids Songs
   Country: Australia
   Ratio: $.0001541
Youtuber: PANDA BOI
   Country: Italy
   Ratio: $.0018156
Youtuber: Tsuriki Show
   Country: Germany
   Ratio: $.0006128
Youtuber: mmoshaya
   Country: Saudi Arabia
   Ratio: $.0001063
Youtuber: Avicii
   Country: Sweden
   Ratio: $.0002013
Youtuber: SlivkiShow
   Country: Ukraine
   Ratio: $.0001579
Youtuber: dednahype
   Country: Latvia
   Ratio: $.0015177
Youtuber: FIFA
   Country: Switzerland
   Ratio: $.0002692
Youtuber: SQUEEZIE
   Country: France
   Ratio: $.0001224
Youtuber: Like Nastya VNM
   Country: Vietnam
   Ratio: $.0002206
Youtuber: Les' Copaque Production
   Country: Malaysia
   Ratio: $.0003341
Youtuber: ýýýýýýýýý Liziqi
   Country: China
   Ratio: $.0001960
Youtuber: ýýýýýýýýýýýýýýý - Al-Remas
   Country: Iraq
   Ratio: $.0002575
Youtuber: LEGO
   Country: Singapore

Ratio: $.0001450
Youtuber: Brawl Stars
Country: Finland
Ratio: $.0002551

Question 10:

How much does a country's total income change from removing the top and bottom 10 YouTubers in a country? And which youtubers are in the new top/bottom 10 spots?

This question is important because knowing how much income is generated from just the top 10 and bottom 10 creators would help someone calculate a more realistic income expectation, based on the other creator's in the user's country. It would also help content creators to see which YouTubers are the most popular in their country, and could tailor their content to match a specific YouTuber's style, or they could keep running the procedure to find a YouTuber whose content is the most similar to what the user wants to create. With each run of the procedure, the user could see how the country's annual income is affected.

This procedure uses input parameters, cursors, stored variables, loops, DML, and database outputs to answer our question and display it to the user. It first stores the sum of every YouTubers' lowest yearly earnings from a user defined country into a variable. The procedure then opens a cursor and starts a loop to delete the top 10 YouTubers from that country. This delete will set off a trigger that prints out the name and rank of each youtuber that will be deleted from the entire database. The procedure then does the same thing for the bottom 10 YouTubers in that country. After that, the country's yearly earnings with the top and bottom 10 YouTubers are displayed, followed by the country's yearly earnings with those names removed. And then a new loop runs which uses the same cursor, but this time it will read and display new values.

Solution:
```
create or replace trigger YouTuber_Deleted
    before delete on Channel_Stats
    for each row
begin
    dbms_output.put_line(rpad(:OLD.Rank, 15, ' ') || :OLD.YouTuber);
end;
/

CREATE OR REPLACE PROCEDURE IncomeMinusOutliers
(
    p_country IN VARCHAR2
)
AS
    Cursor Top_YouTubers is
        select * from Channel_Stats
        where Country = p_country
        order by rank asc;

    Cursor Bottom_YouTubers is
        select * from Channel_Stats
        where Country = p_country
```

```
        order by rank desc;

    current_top_youtuber Channel_Stats%ROWTYPE;
    current_bottom_youtuber Channel_Stats%ROWTYPE;

    counter NUMBER := 0;
    CountryEarnings NUMBER;
BEGIN
    select sum(lowest_Yearly_earnings)
        into CountryEarnings
    from channel_stats
    where country = p_country;

    open Top_Youtubers;

    fetch Top_Youtubers into current_top_youtuber;

    dbms_output.put_line(rpad('Rank', 15, ' ') ||'Top YouTubers Removed');
    dbms_output.put_line(rpad('-', 40, '-'));
    while counter < 10 and Top_YouTubers%FOUND LOOP
        delete from CHANNEL_STATS where Youtuber = current_Top_YouTuber.YouTuber;
        fetch Top_Youtubers into current_top_youtuber;
        counter := counter + 1;
    end LOOP;

    close Top_YouTubers;
    dbms_output.put_line('');
    counter := 0;
    open Bottom_Youtubers;

    fetch Bottom_Youtubers into current_bottom_youtuber;

    dbms_output.put_line(rpad('Rank', 15, ' ') ||'Bottom YouTubers Removed');
    dbms_output.put_line(rpad('-', 40, '-'));

    while counter < 10 and Bottom_YouTubers%FOUND LOOP
        delete from CHANNEL_STATS where Youtuber = current_bottom_youtuber.YouTuber;
        fetch Bottom_Youtubers into current_bottom_youtuber;
        counter := counter + 1;
    end LOOP;

    close Bottom_YouTubers;

    dbms_output.put_line('');
```

```
    dbms_output.put_line('Earnings in country '''|| p_country || ''' including top and lowest 10 in country: ' ||
countryEarnings);

    select sum(lowest_Yearly_earnings)
        into CountryEarnings
    from debug_youtube
    where country = p_country;

    dbms_output.put_line('Earnings in country '''|| p_country || ''' excluding top and lowest 10 in country: ' ||
countryEarnings);
    dbms_output.put_line('');

    counter := 0;
    open Top_Youtubers;

    fetch Top_Youtubers into current_top_youtuber;

    dbms_output.put_line(rpad('Rank', 15, ' ') ||'New Top YouTubers');
    dbms_output.put_line(rpad('-', 40, '-'));
    while counter < 10 and Top_YouTubers%FOUND LOOP
        dbms_output.put(rpad(current_top_youtuber.rank, 15, ' '));
        dbms_output.put_line(current_top_youtuber.YouTuber);
        fetch Top_YouTubers into current_top_youtuber;
        counter := counter + 1;
    end LOOP;

    close Top_YouTubers;
    dbms_output.put_line('');

    counter := 0;
    open Bottom_Youtubers;

    fetch Bottom_Youtubers into current_bottom_youtuber;

    dbms_output.put_line(rpad('Rank', 15, ' ') ||'New Bottom YouTubers');
    dbms_output.put_line(rpad('-', 40, '-'));
    while counter < 10 and Bottom_YouTubers%FOUND LOOP
        dbms_output.put(rpad(current_bottom_youtuber.rank, 15, ' '));
        dbms_output.put_line(current_bottom_youtuber.YouTuber);
        fetch Bottom_Youtubers into current_bottom_youtuber;
        counter := counter + 1;
    end LOOP;

    close Bottom_YouTubers;
```

END IncomeMinusOutliers;
/

exec IncomeMinusOutliers;

Results:

Rank	Top YouTubers Removed
3	MrBeast
4	Cocomelon - Nursery Rhymes
7	ýýý Kids Diana Show
10	Vlad and Niki
12	WWE
23	Pinkfong Baby Shark - Kids' Songs & Stories
29	Dude Perfect
30	Movieclips
36	EminemMusic
37	Marshmello

Rank	Bottom YouTubers Removed
990	Migos ATL
989	Caylus
988	Avril Lavigne
984	MoniLina
974	LOUD
971	_vector_
958	Bebefinn - Nursery Rhymes & Kids Songs
956	First We Feast
951	Wolfoo Family
950	People Vs Food

Earnings in country "United States" including top and lowest 10 in country: 136041530.32
Earnings in country "United States" excluding top and lowest 10 in country: 112945547.32

Rank	New Top YouTubers
42	Taylor Swift
43	Ariana Grande
44	BillionSurpriseToys - Nursery Rhymes & Cartoons
46	Billie Eilish
50	SonyMusicIndiaVEVO
59	Katy Perry
68	Masha and The Bear
69	Like Nastya Show
73	Little Baby Bum - Nursery Rhymes & Kids Songs
80	XXXTENTACION

Rank	New Bottom YouTubers
947	NickiMinajAtVEVO
945	CaseyNeistat
942	Heidi y Zidane
939	Blossom
938	YoungBoy Never Broke Again
937	Future
935	Diana and Roma IND
930	Beyoncï¿½ï¿½
928	Adam W
920	EnriqueIglesiasVEVO

Citations

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https://financebuzz.com/how-much-youtubers-make#:~:text=The%20average%20YouTuber%20
makes%20about,%2C%20up%2040%25%20from%202020