Query 1:

[

{

$project: {

\_id: 0,

reviews: 1,

},

},

{

$unwind: "$reviews",

},

{

$project: {

sentiment: {

$switch: {

branches: [

{

case: {

$regexMatch: {

input: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

regex:

"(excellent|awesome|fantastic|amazing|outstanding|superb|terrific|pleasing|positive|perfect|great|wonderful|impressive|superior|exceptional|satisfying|delightful|splendid|stellar|commendable|first-rate|pleasurable|exquisite|admirable|noteworthy|brilliant|charming|enjoyable|marvelous|positive|pleasant|immaculate|gratifying|uplifting|heartwarming|affirmative|captivating|favorable|constructive|exuberant|good service|excellent service|attentive service|friendly staff|helpful staff|courteous staff|prompt service|efficient service|professional service|polite staff|fast service|positive experience|positive stay|positive impression|positive feedback|positive vibes|excellent room|awesome amenities|fantastic service|amazing location|outstanding staff|superb facilities|terrific experience|pleasing ambiance|positive atmosphere|perfect stay|great hospitality|wonderful view|impressive decor|superior cleanliness|exceptional quality|satisfying comfort|delightful surroundings|splendid decor|stellar service|commendable staff|first-rate amenities|pleasurable stay|exquisite design|admirable features|noteworthy comfort|brilliant arrangement|charming atmosphere|enjoyable environment|marvelous setting)",

options: "i",

},

},

then: "positive",

},

{

case: {

$regexMatch: {

input: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

regex:

"(poor|terrible|awful|horrible|disappointing|unpleasant|dreadful|inferior|negative|displeasing|unsatisfactory|disastrous|atrocious|appalling|lousy|mediocre|subpar|pitiful|regrettable|unfavorable|unpleasant|dismal|dreadful|discouraging|lamentable|gloomy|unfortunate|repugnant|offensive|disgusting|vile|abysmal|dreary|deplorable|disheartening|oppressive|woeful|unpleasant|objectionable|inferior|repulsive|poor service|bad service|inattentive service|unfriendly staff|unhelpful staff|rude staff|slow service|inefficient service|unprofessional service|discourteous staff|negative experience|negative stay|negative impression|negative feedback|negative vibes|poor room|terrible amenities|awful service|horrible location|disappointing staff|unpleasant facilities|dreadful experience|inferior ambiance|negative atmosphere|displeasing stay|unsatisfactory decor|disastrous cleanliness|atrocious surroundings|appalling decor|lousy service|mediocre amenities|subpar view|pitiful hospitality|regrettable features|unfavorable comfort|unpleasant surroundings|dismal arrangement|dreadful environment|discouraging setting|lamentable design|gloomy atmosphere|unfortunate features|repugnant hospitality|offensive staff|disgusting service|vile ambiance|abysmal environment|dreary setting|deplorable cleanliness|disheartening decor|oppressive surroundings|woeful facilities|unpleasant room|objectionable amenities|inferior features|repulsive comfort|poor service|bad service|inattentive service|unfriendly staff|unhelpful staff|rude staff|slow service|inefficient service|unprofessional service|discourteous staff|negative experience|negative stay|negative impression|negative feedback|negative vibes|poor room|terrible amenities|awful service|horrible location|disappointing staff|unpleasant facilities|dreadful experience|inferior ambiance|negative atmosphere|displeasing stay|unsatisfactory decor|disastrous cleanliness|atrocious surroundings|appalling decor|lousy service|mediocre amenities|subpar view|pitiful hospitality|regrettable features|unfavorable comfort|unpleasant surroundings|dismal arrangement|dreadful environment|discouraging setting|lamentable design|gloomy atmosphere|unfortunate features|repugnant hospitality|offensive staff|disgusting service|vile ambiance|abysmal environment|dreary setting|deplorable cleanliness|disheartening decor|oppressive surroundings|woeful facilities|unpleasant room|objectionable amenities|inferior features|repulsive comfort)",

options: "i",

},

},

then: "negative",

},

{

case: {

$regexMatch: {

input: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

regex:

"(average|mediocre|ordinary|standard|typical|neutral|middling|so-so|common|routine|regular|adequate|fair|tolerable|passable|acceptable|moderate)",

options: "i",

},

},

then: "average",

},

],

default: "unknown",

},

},

content: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

rating: "$reviews.rating",

},

},

{

$match: {

sentiment: {

$ne: "unknown",

},

rating: {

$in: [1, 2, 3, 4, 5],

},

},

},

{

$group: {

\_id: "$sentiment",

count: {

$sum: 1,

},

},

},

]

2nd query

[

{

$match: {

"reviews.date": { $exists: true, $gte: ISODate("2011-01-01"), $lt: ISODate("2020-01-01") }

}

},

{

$project: {

\_id: 0,

hotelId: "$\_id",

month: { $month: "$reviews.date" },

year: { $year: "$reviews.date" },

sentiment: {

$switch: {

branches: [

{

case: {

$regexMatch: {

input: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

regex: "(excellent|awesome|fantastic|amazing|outstanding|superb|terrific|pleasing|positive|perfect|great|wonderful|impressive|superior|exceptional|satisfying|delightful|splendid|stellar|commendable|first-rate|pleasurable|exquisite|admirable|noteworthy|brilliant|charming|enjoyable|marvelous|positive|pleasant|immaculate|gratifying|uplifting|heartwarming|affirmative|captivating|favorable|constructive|exuberant|good service|excellent service|attentive service|friendly staff|helpful staff|courteous staff|prompt service|efficient service|professional service|polite staff|fast service|positive experience|positive stay|positive impression|positive feedback|positive vibes|excellent room|awesome amenities|fantastic service|amazing location|outstanding staff|superb facilities|terrific experience|pleasing ambiance|positive atmosphere|perfect stay|great hospitality|wonderful view|impressive decor|superior cleanliness|exceptional quality|satisfying comfort|delightful surroundings|splendid decor|stellar service|commendable staff|first-rate amenities|pleasurable stay|exquisite design|admirable features|noteworthy comfort|brilliant arrangement|charming atmosphere|enjoyable environment|marvelous setting)",

options: "i",

},

},

then: "positive",

},

{

case: {

$regexMatch: {

input: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

regex: "(poor|terrible|awful|horrible|disappointing|unpleasant|dreadful|inferior|negative|displeasing|unsatisfactory|disastrous|atrocious|appalling|lousy|mediocre|subpar|pitiful|regrettable|unfavorable|unpleasant|dismal|dreadful|discouraging|lamentable|gloomy|unfortunate|repugnant|offensive|disgusting|vile|abysmal|dreary|deplorable|disheartening|oppressive|woeful|unpleasant|objectionable|inferior|repulsive|poor service|bad service|inattentive service|unfriendly staff|unhelpful staff|rude staff|slow service|inefficient service|unprofessional service|discourteous staff|negative experience|negative stay|negative impression|negative feedback|negative vibes|poor room|terrible amenities|awful service|horrible location|disappointing staff|unpleasant facilities|dreadful experience|inferior ambiance|negative atmosphere|displeasing stay|unsatisfactory decor|disastrous cleanliness|atrocious surroundings|appalling decor|lousy service|mediocre amenities|subpar view|pitiful hospitality|regrettable features|unfavorable comfort|unpleasant surroundings|dismal arrangement|dreadful environment|discouraging setting|lamentable design|gloomy atmosphere|unfortunate features|repugnant hospitality|offensive staff|disgusting service|vile ambiance|abysmal environment|dreary setting|deplorable cleanliness|disheartening decor|oppressive surroundings|woeful facilities|unpleasant room|objectionable amenities|inferior features|repulsive comfort|poor service|bad service|inattentive service|unfriendly staff|unhelpful staff|rude staff|slow service|inefficient service|unprofessional service|discourteous staff|negative experience|negative stay|negative impression|negative feedback|negative vibes|poor room|terrible amenities|awful service|horrible location|disappointing staff|unpleasant facilities|dreadful experience|inferior ambiance|negative atmosphere|displeasing stay|unsatisfactory decor|disastrous cleanliness|atrocious surroundings|appalling decor|lousy service|mediocre amenities|subpar view|pitiful hospitality|regrettable features|unfavorable comfort|unpleasant surroundings|dismal arrangement|dreadful environment|discouraging setting|lamentable design|gloomy atmosphere|unfortunate features|repugnant hospitality|offensive staff|disgusting service|vile ambiance|abysmal environment|dreary setting|deplorable cleanliness|disheartening decor|oppressive surroundings|woeful facilities|unpleasant room|objectionable amenities|inferior features|repulsive comfort)",

options: "i",

},

},

then: "negative",

},

{

case: {

$regexMatch: {

input: {

$concat: [

"$reviews.text",

" ",

"$reviews.title",

],

},

regex: "(average|mediocre|ordinary|standard|typical|neutral|middling|so-so|common|routine|regular|adequate|fair|tolerable|passable|acceptable|moderate)",

options: "i",

},

},

then: "average",

},

],

default: "unknown",

},

},

}

},

{

$match: {

sentiment: { $in: ["positive", "negative"] }

}

},

{

$group: {

\_id: {

year: "$year",

month: "$month",

sentiment: "$sentiment"

},

count: { $sum: 1 }

}

},

{

$group: {

\_id: {

year: "$\_id.year",

month: "$\_id.month"

},

positive: {

$sum: { $cond: { if: { $eq: ["$\_id.sentiment", "positive"] }, then: "$count", else: 0 } }

},

negative: {

$sum: { $cond: { if: { $eq: ["$\_id.sentiment", "negative"] }, then: "$count", else: 0 } }

},

total: { $sum: "$count" }

}

},

{

$project: {

\_id: 0,

year: "$\_id.year",

month: "$\_id.month",

positive: 1,

negative: 1,

total: 1

}

},

{

$sort: {

year: 1,

total: -1

}

},

{

$group: {

\_id: "$year",

data: {

$push: {

year: "$year",

month: "$month",

monthName: {

$switch: {

branches: [

{ case: { $eq: ["$month", 1] }, then: "January" },

{ case: { $eq: ["$month", 2] }, then: "February" },

{ case: { $eq: ["$month", 3] }, then: "March" },

{ case: { $eq: ["$month", 4] }, then: "April" },

{ case: { $eq: ["$month", 5] }, then: "May" },

{ case: { $eq: ["$month", 6] }, then: "June" },

{ case: { $eq: ["$month", 7] }, then: "July" },

{ case: { $eq: ["$month", 8] }, then: "August" },

{ case: { $eq: ["$month", 9] }, then: "September" },

{ case: { $eq: ["$month", 10] }, then: "October" },

{ case: { $eq: ["$month", 11] }, then: "November" },

{ case: { $eq: ["$month", 12] }, then: "December" },

],

default: "Unknown",

},

},

positive: "$positive",

negative: "$negative",

total: "$total"

}

}

}

},

{

$project: {

\_id: 0,

year: "$\_id",

data: {

$slice: ["$data", 3]

}

}

}

]

Query 3:

[

{

"$unwind": "$reviews"

},

{

"$project": {

"\_id": 0,

"name": "$name",

"city": "$city",

"province": "$province",

"sentiment": {

"$switch": {

"branches": [

{

"case": {

"$regexMatch": {

"input": {

"$concat": [

"$reviews.text",

" ",

"$reviews.title",

]

},

"regex": "(excellent|awesome|fantastic|amazing|outstanding|superb|terrific|pleasing|positive|perfect|great|wonderful|impressive|superior|exceptional|satisfying|delightful|splendid|stellar|commendable|first-rate|pleasurable|exquisite|admirable|noteworthy|brilliant|charming|enjoyable|marvelous|positive|pleasant|immaculate|gratifying|uplifting|heartwarming|affirmative|captivating|favorable|constructive|exuberant|good service|excellent service|attentive service|friendly staff|helpful staff|courteous staff|prompt service|efficient service|professional service|polite staff|fast service|positive experience|positive stay|positive impression|positive feedback|positive vibes|excellent room|awesome amenities|fantastic service|amazing location|outstanding staff|superb facilities|terrific experience|pleasing ambiance|positive atmosphere|perfect stay|great hospitality|wonderful view|impressive decor|superior cleanliness|exceptional quality|satisfying comfort|delightful surroundings|splendid decor|stellar service|commendable staff|first-rate amenities|pleasurable stay|exquisite design|admirable features|noteworthy comfort|brilliant arrangement|charming atmosphere|enjoyable environment|marvelous setting)",

"options": "i",

},

},

"then": "positive",

},

{

"case": {

"$regexMatch": {

"input": {

"$concat": [

"$reviews.text",

" ",

"$reviews.title",

]

},

"regex": "(poor|terrible|awful|horrible|disappointing|unpleasant|dreadful|inferior|negative|displeasing|unsatisfactory|disastrous|atrocious|appalling|lousy|mediocre|subpar|pitiful|regrettable|unfavorable|unpleasant|dismal|dreadful|discouraging|lamentable|gloomy|unfortunate|repugnant|offensive|disgusting|vile|abysmal|dreary|deplorable|disheartening|oppressive|woeful|unpleasant|objectionable|inferior|repulsive|poor service|bad service|inattentive service|unfriendly staff|unhelpful staff|rude staff|slow service|inefficient service|unprofessional service|discourteous staff|negative experience|negative stay|negative impression|negative feedback|negative vibes|poor room|terrible amenities|awful service|horrible location|disappointing staff|unpleasant facilities|dreadful experience|inferior ambiance|negative atmosphere|displeasing stay|unsatisfactory decor|disastrous cleanliness|atrocious surroundings|appalling decor|lousy service|mediocre amenities|subpar view|pitiful hospitality|regrettable features|unfavorable comfort|unpleasant surroundings|dismal arrangement|dreadful environment|discouraging setting|lamentable design|gloomy atmosphere|unfortunate features|repugnant hospitality|offensive staff|disgusting service|vile ambiance|abysmal environment|dreary setting|deplorable cleanliness|disheartening decor|oppressive surroundings|woeful facilities|unpleasant room|objectionable amenities|inferior features|repulsive comfort|poor service|bad service|inattentive service|unfriendly staff|unhelpful staff|rude staff|slow service|inefficient service|unprofessional service|discourteous staff|negative experience|negative stay|negative impression|negative feedback|negative vibes|poor room|terrible amenities|awful service|horrible location|disappointing staff|unpleasant facilities|dreadful experience|inferior ambiance|negative atmosphere|displeasing stay|unsatisfactory decor|disastrous cleanliness|atrocious surroundings|appalling decor|lousy service|mediocre amenities|subpar view|pitiful hospitality|regrettable features|unfavorable comfort|unpleasant surroundings|dismal arrangement|dreadful environment|discouraging setting|lamentable design|gloomy atmosphere|unfortunate features|repugnant hospitality|offensive staff|disgusting service|vile ambiance|abysmal environment|dreary setting|deplorable cleanliness|disheartening decor|oppressive surroundings|woeful facilities|unpleasant room|objectionable amenities|inferior features|repulsive comfort)",

"options": "i",

},

},

"then": "negative",

},

{

"case": {

"$regexMatch": {

"input": {

"$concat": [

"$reviews.text",

" ",

"$reviews.title",

]

},

"regex": "(average|mediocre|ordinary|standard|typical|neutral|middling|so-so|common|routine|regular|adequate|fair|tolerable|passable|acceptable|moderate)",

"options": "i",

},

},

"then": "average",

},

],

"default": "unknown",

},

},

}

},

{

"$match": {

"sentiment": {"$in": ["positive", "negative", "average"]}

}

},

{

"$group": {

"\_id": {

"province": "$province",

"city": "$city",

"hotel": "$name",

"sentiment": "$sentiment"

},

"count": {"$sum": 1}

}

},

{

"$group": {

"\_id": {

"province": "$\_id.province",

"city": "$\_id.city",

"hotel": "$\_id.hotel"

},

"sentiments": {

"$push": {

"sentiment": "$\_id.sentiment",

"count": "$count"

}

},

"totalReviews": {"$sum": "$count"}

}

},

{

"$sort": {"totalReviews": -1}

},

{

"$project": {

"\_id": 0,

"province": "$\_id.province",

"city": "$\_id.city",

"hotel": "$\_id.hotel",

"reviews": "$sentiments",

"totalReviews": 1

}

}

]

Query 4:

[

{"$unwind": "$reviews"},

{

"$project": {

"\_id": 0,

"name": "$name",

"city": "$city",

"province": "$province",

"sentiment": {

"$switch": {

"branches": [

{

"case": {

"$regexMatch": {

"input": {

"$concat": [

"$reviews.text",

" ",

"$reviews.title"

]

},

"regex": "(excellent|awesome|fantastic|amazing|outstanding|superb|terrific|pleasing|positive|perfect|great|wonderful|impressive|superior|exceptional|satisfying|delightful|splendid|stellar|commendable|first-rate|pleasurable|exquisite|admirable|noteworthy|brilliant|charming|enjoyable|marvelous|positive|pleasant|immaculate|gratifying|uplifting|heartwarming|affirmative|captivating|favorable|constructive|exuberant|good service|excellent service|attentive service|friendly staff|helpful staff|courteous staff|prompt service|efficient service|professional service|polite staff|fast service|positive experience|positive stay|positive impression|positive feedback|positive vibes|excellent room|awesome amenities|fantastic service|amazing location|outstanding staff|superb facilities|terrific experience|pleasing ambiance|positive atmosphere|perfect stay|great hospitality|wonderful view|impressive decor|superior cleanliness|exceptional quality|satisfying comfort|delightful surroundings|splendid decor|stellar service|commendable staff|first-rate amenities|pleasurable stay|exquisite design|admirable features|noteworthy comfort|brilliant arrangement|charming atmosphere|enjoyable environment|marvelous setting)",

"options": "i"

}

},

"then": "positive"

}

],

"default": "unknown"

}

},

"reviewMonth": {"$month": "$reviews.date"}

}

},

{"$match": {"province": "CA", "sentiment": "positive"}},

{

"$group": {

"\_id": {

"province": "$province",

"city": "$city",

"hotel": "$name",

"reviewMonth": "$reviewMonth"

},

"count": {"$sum": 1}

}

},

{

"$group": {

"\_id": {

"province": "$\_id.province",

"city": "$\_id.city",

"hotel": "$\_id.hotel"

},

"reviews": {

"$push": {

"month": "$\_id.reviewMonth",

"count": "$count"

}

},

"totalReviews": {"$sum": "$count"}

}

},

{"$sort": {"totalReviews": -1}},

{

"$project": {

"\_id": 0,

"province": "$\_id.province",

"city": "$\_id.city",

"hotel": "$\_id.hotel",

"reviews": "$reviews",

"totalReviews": 1

}

}

]