1. Business Processes

Appointment Booking and Scheduling

a. A comprehensive overview of the business process along with an explanation of the performance metrics produced by this process, potential existing analytical challenges.

The Process of people making appointments: Customers access the system via our system, typically a website or mobile app. Then customers select appointments by browse available dates and times, choosing their preferred slot based on real-time availability displayed in the system. They will provide necessary details, such as name, contact information, and any specific requirements, ensuring a comprehensive record. Upon selection, the system instantly confirms the appointment, sending automated notifications via email or SMS to the customer and updating the central calendar (system allows reschedule or cancel appointments). Automated reminders are sent closer to the appointment time, reducing the likelihood of no-shows and keeping users informed. In addition, Post-appointment, the system may prompt customer for feedback, helping businesses improve services, and may also facilitate follow-up appointments or engagements. Regular analysis of user feedback and system performance allows for continuous improvement, ensuring an optimal experience for customers engaging with the appointment booking and scheduling process.

- **Expand User Base**: Increase the number of registered companies (both service providers and customers) by a **0.5% monthly (comparing to previous month)**.
- Increase number of **online Bookings by 20%** by the end of the year (comparing to previous year)**.**

b. Typical Questions

How do worker ratings influence the number of bookings?

How do company ratings affect bookings?

What characteristics are common among highly-rated service providers?

How does seasonal variation affect booking volumes for different service categories?

What is the effect of weather conditions on bookings for outdoor-related services?

What impact do promo codes have on booking rates?

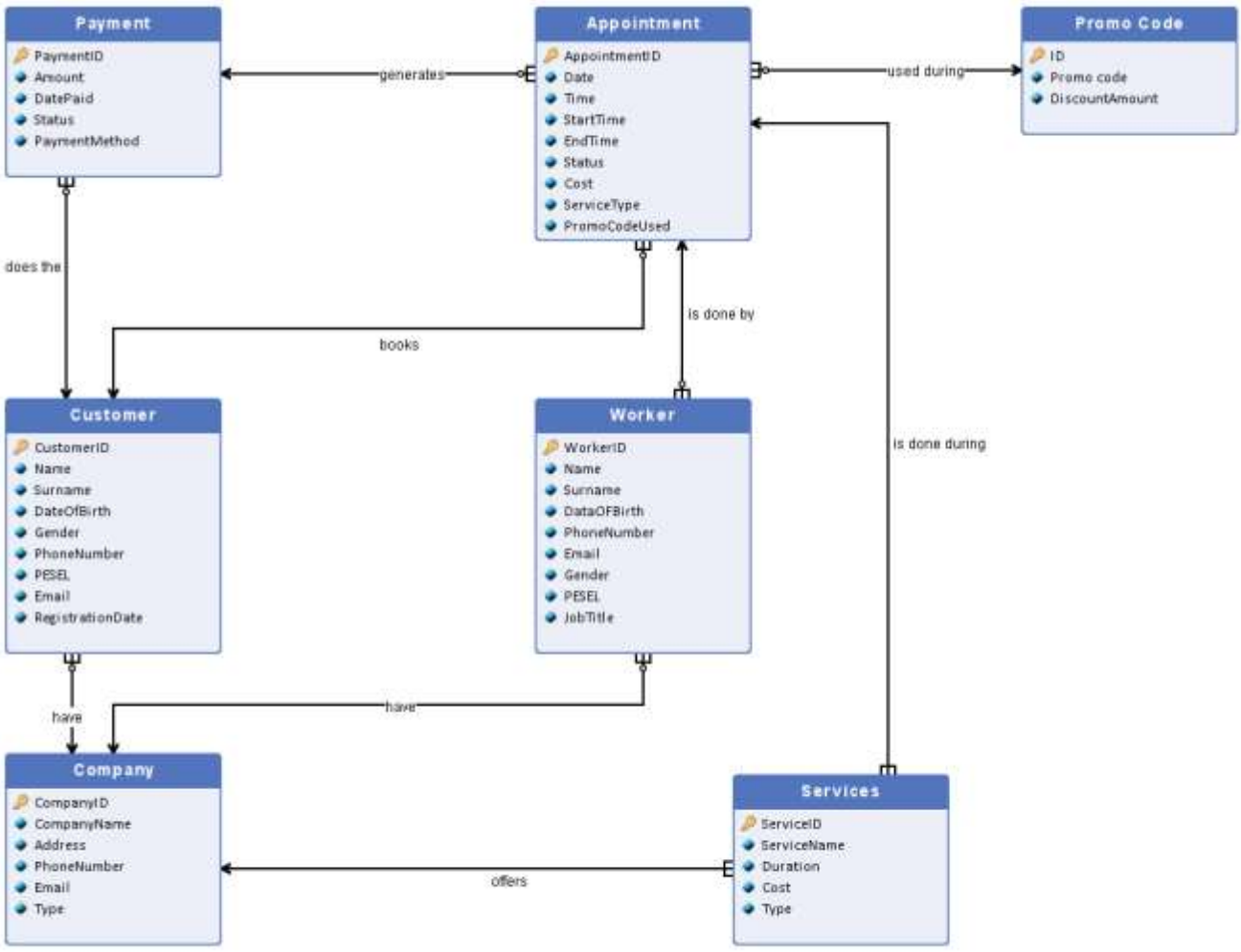
Give the average monthly number of appointments made for the last year.

Give the number of appointments made during the holiday periods.

c. Data

The appointment system, known as "Appointify," extracts all data related to appointments from “Appointify” and Excel “Reviews Table”

2. Data sources structures (Appointify)



Service

Attribute	Domain/Data Type	Description
ServiceID	Numerical	PK
ServiceName	String characters	Name of the Service
Duration	Time interval	Duration of the provided Service
Cost	Decimal (two digits precision)	Price in PLN (with the grosz precision)
Type	String characters	What type of service.
AppointmentID	Numerical	FK from Appointment
CompanyID	Numerical	FK from Company

Company

Attribute	Domain/Data Type	Description
CompanyID	Numerical	PK
CompanyName	String characters	Name of the company(of Barbershop, Clinic, Beauty salon, etc.)
Address	String characters	Address of the company
PhoneNumber	Numerical	Phone number of the company
Email	String characters	Email of the company
Type	String characters	Like what is this company. (Barbershop, Beauty salon, Clinic, etc.)

Worker

Attribute	Domain/Data Type	Description
WorkerID	Numerical	PK
Name	String characters	First name of the worker (employee).
Surname	String characters	Last name of the worker.
DateOfBirth	DateTime	Date of Birth of Worker
PhoneNumber	Numerical	Phone number

Email	String characters	Email
Gender	Boolean	Gender of worker
PESEL	Natural number with exactly 11 digits.	Social Security Number of employee
JobTitle	String characters	What is the job of worker (Barber, Doctor, Receptionist, Hair dresser, etc.)
CompanyID	Numerical	FK from Company
Appointment	Numerical	FK from Appointment

Payment

Attribute	Domain/Data Type	Description
PaymentID	Numerical	PK
Amount	Decimal (two digits precision)	Amount payed
DatePaid	DateTime	Date when payment was done
Status	String characters	Status (Not payed, Pending, Paid)
PaymentMethod	String characters	Method of Payment (Cash or Card)
CustomerID	Numerical	FK from Customer

Customer

Attribute	Domain/Data Type	Description
CustomerID	Numerical	PK
Name	String characters	First name of the Customer.
Surname	String characters	Last name of the Customer.
DateOfBirth	DateTime	Date of Birth
Gender	Boolean	Gender (Male or Female)
Phonenumber	Numerical	Contact number of the Customer.

PESEL	Natural number with exactly 11 digits.	PESEL
Email	String characters	Email of Customer
RegistrationDate	DateTime	Date when Customer registered account in the system
CompanyID	Numerical	FK from Company

Promo Code

Attribute	Domain/Data Type	Description
ID	Numerical	PK
Promo code	String characters	Code of the promo
DiscountAmount	Decimal (two digits precision)	Amount of Discount in PLN

Appointment

Attribute	Domain/Data Type	Description
AppointmentID	Numerical	PK
Date	DateTime	Date of the appointment
Time	Time	Precise time of the appointment
StartTime	DateTime	Time when appointment started
EndTime	DateTime	Time when appointment ended
Status	String characters	Done, Waiting, Canceled, No Show
Cost	Decimal (two digits precision)	Cost of Appointment
ServiceType	String characters	Type of Service used during appointment
PromoCodeUsed	Boolean	True or False
CustomerID	Numerical	FK from Customer
PromoID	Numerical	FK from Promo Code

REVIEWS EXCEL TABLE

Sheet 1 (Worker Reviews Expanded)

- Column A: ReviewID - Numeric, unique identifier for each review.
- Column B: WorkerID - Numeric, identifier of the worker being reviewed.
- Column C: Worker Name - Text, the name of the worker.
- Column D: JobTitle - Text, type of service the worker provided.
- Column E: ReviewDate - Date in format year-month-day, e.g., 2023-10-01.
- Column F: ReviewCategory - Text, categories to classify the review, such as 'Friendliness', 'Professionalism', 'Punctuality', 'Quality of Work'.
- Column G: CategoryRating - Numeric, 0-5 scale rating for each category in Column H.
- Column I: Rating - Numeric, 0-5 scale of the average review rating.

Sheet 2 (Company Reviews)

Column A: ReviewID (numeric, unique identifier for each review).

Column B: CompanyName (text, name of the company being reviewed).

Column C: ServiceType (text, type of service the company provided).

Column D: Rating (numeric, 0-5 scale of the review rating).

Column F: ReviewDate (Date in format year-month-day, e.g., 2023-10-01).

3.Scenarios of analytical problems

How does time influence to the number of bookings (like time of the day (peak hours), season of the year, weather, near-the-Holidays, etc.)

1. Find the most peak hour during the day (according to number of booking) (During which time companies experience peak bookings)?
2. Compare the number of bookings near-the-holidays days in current and previous month.
3. Which Service Categories Show Seasonal Booking Patterns?
4. What Is the Impact of Weekday vs. Weekend on Booking Volumes?
5. How does weather influence in booking/canceling appointments? (External)

Why was there an increase / decrease in number of bookings this month?

1. How does rating of workers influence on number of bookings?
2. How does rating of companies influence on number of bookings?
3. How effective are promo codes?
4. What are the common characteristics of highly rated services providers?
5. Are customers who had free appointments are likely to book another (normal) appointments?
6. Which companies have the most amount of customers?
7. Which companies have the most amount of booking?
8. Which services are most popular?
9. What is the average time between initial registration and first booking for new customers?
10. How does location of companies and customers influence each other?

4. Data needed for analytical problems

Analytical problem: How does time influence to the number of bookings (like time of the day (peak hours), season of the year, weather, near-the-Holidays, etc.)

1. Find the most peak hour during the day (according to number of booking) (During which time companies experience peak bookings)?
    - **most peak hour** – Appointify, table Appointment, column Time
2. Compare the number of appointments near-the-holidays days in current and previous month.
    - **date of the appointment** – Appointify, table Appointment, column Date
    - **near-the-holiday days** – the holiday days can be chosen by hand or be collected from some publicly available calendar, e.g. Google calendar
3. Which Service Categories Show Seasonal Booking Patterns?
    - **service category** – Appointify, table Services, column Type
    - **season** – can be chosen by hand (like between 1st June and 31st August) or be collected from some publicly available calendar, e.g. Google calendar
    - **date of the appointment** – Appointify, table Appointment, column Date
4. What Is the Impact of Weekday vs. Weekend on Booking Volumes?
    - **date of the appointment** – Appointify, table Appointment, column Date
    - day of the week – can be chosen by hand or be collected from some publicly available calendar, e.g. Google calendar
5. How does weather influence in booking/canceling appointments? (External)
    - **status of appointment** – Appointify, table Appointment, column Status (Status can be maybe: "Done", "Canceled", "No Show", "Waiting")
    - **date of the appointment** – Appointify, table Appointment, column Date

- **weather** - this would require integrating with an external weather service or database. Data could include:
    - weather Condition on the day of the appointment (e.g., rain, snow, sunny, etc.). This information could be fetched from a weather API based on the Date of the appointment.
    - temperature: Average temperature on the day, which could influence the likelihood of cancellations, especially for outdoor-related services.

Analytical problem: Why was there an increase / decrease in number of bookings this month?

1. How does rating of workers influence on number of bookings?
    - **rating of worker** - REVIEWS EXCEL TABLE, Sheet 1, column I – Rating
    - **number of bookings per worker** - count of entries in Appointify, table Appointment, where each entry is linked to a WorkerID
2. How does rating of companies influence on number of bookings?
    - **rating of company** - REVIEWS EXCEL TABLE, Sheet 2, column D Rating
3. How effective are promo codes?
    - **use of promo code** - Appointify, table Appointment, column PromoCodeUsed (Boolean).
    - **booking volume with vs. without promo codes** - count of appointment entries with PromoCodeUsed marked true versus false.
4. What are the common characteristics of highly rated services providers?
    - **characteristics of worker** - REVIEWS EXCEL TABLE, Sheet 1, column F - ReviewCategory and H - CategoryRating (e.g. 'Friendliness', 'Professionalism', 'Punctuality', 'Quality of Work')
5. Are customers who had free appointments are likely to book another (normal) appointments?
    - **free appointments** – Appointify, table Appointment, column Cost (appointments with cost = ‘0’)
    - **subsequent booking records** - for customers who had a free appointment, count of subsequent appointments not marked as free.

6. Which companies have the most amount of customers?
    - **amount of customers** - count distinct CustomerID for each CompanyID in the Appointments table to understand customer reach.
7. Which companies have the most amount of booking?
    - **number of bookings** – can be counted using table Appointment from Appointify, connecting tables Worker and Company
8. Which services are most popular?
    - **service category** – Appointify, table Services, column Type
    - **number of bookings per service** - count entries in Appointify, table Appointments, column ServiceID to determine popularity
9. What is the average time between initial registration and first booking for new customers?
    - **customer registration date** – Appointify, table Customer, column RegistrationDate
    - **first booking data** – Appointify, table Appointment, column Date

10. How does location of companies and customers influence each other?

- **location of company** – Appointify, table Company, column Address
- **location of customer** – no such information

Introduce a feature within the Appointify platform that prompts customers to optionally share their **location** (e.g., postal code) during **registration or booking**. Additionally, consider collecting data on customer location preferences for services (e.g., within a certain radius of their home or work).

Data to be Collected:

Customer Location: Collect customer location data during account setup or booking, ensuring privacy and consent are prioritized.