1. Transcript of a conversation between Dr. Margaret Holmes and a systems analyst:

**Dr. Holmes:** Thanks for coming. I know it’s late, but I really need your help. The paperwork around this place is really getting out of hand.

**Analyst**: How do you mean?

**Dr. Holmes:** I started my practice eight years ago—from scratch, mind you! I’m a good dentist. I really take good care of my patients, but nobody at dental school ever talked about how you manage a practice. We sure could have used a class in keeping patient records, hiring staff, firing staff, billing, inventory, patient scheduling—you name it. I seem to be swimming in paper in this office.

**Analyst:** Let’s see if we can narrow down your problems a bit. First of all, how many employees do you have?

**Dr. Holmes:** Just two—a receptionist/clerk-type person and a dental assistant.

**Analyst:** Who’s responsible for the paperwork?

**Dr. Holmes:** The receptionist. She makes appointments and is supposed to keep track of patient records.

**Analyst:** What about the financial end of things?

**Dr. Holmes:** I have an accountant.

**Analyst:** Does the accountant do the billing?

**Dr. Holmes:** Yeah. Actually, she’s my sister. She comes in once a week and picks up all the payments we’ve received. Then she balances the checkbook, pays all the bills, and does whatever-accountants-do with their spreadsheets. Once a month she comes up with a summary of patient charges and amounts people owe. Then she runs a program to print up the bills. The receptionist takes care of mailing them.

**Analyst:** Do you pay your sister?

**Dr. Holmes:** As much as I can. Considering all the work she’s doing, it’s really not enough.

**Analyst:** So you can either pay her more, cut down on the amount of work you ask her to do, or both.

**Dr. Holmes** (laughing): Well, if you can help me, I can cut down on her workload. If we can also get more accurate billing information, then I can make more money and pay her more, too.

**Analyst**: More accurate billing? What’s the problem there?

**Dr. Holmes:** I suppose it’s the fault of the way I record patient charges. I keep a folder for each patient. Whenever I see a patient, I write down whatever I did and note the chargeable services. I give the folder back to the receptionist, who’s supposed to log the fact that I saw the patient in a notebook. Then the card gets filed.

**Analyst:** The notebook you just mentioned—is that what your sister uses to figure out the billing?

**Dr. Holmes:** That and the patient folders themselves. You see, when a patient makes a payment or when we get a payment from an insurance company for a patient, the receptionist pulls the patient’s folder and marks the payment in the folder. The log tells my sister who’s been in the office, but the patient folder actually records what was done to the patient, what the patient has paid, and how much the patient still owes.

**Analyst:** Since you say there’s a problem with billing, the system obviously isn’t working.

**Dr. Holmes:** All sorts of things go wrong. Sometimes the patient folders get misfiled. My sister can’t find them when she needs to see how much someone really owes us. Then we’re faced with either letting it go and hoping the patient has insurance to cover the cost, or running the risk of angering a patient by billing them for something that’s already been paid. Other things go wrong, too. Sometimes payments aren’t recorded, or they get credited to the wrong patient.

**Analyst:** How do you organize the patient files?

**Dr. Holmes:** By name.

**Analyst:** Hmm. What happens if you have two patients by the same name?

**Dr. Holmes:** Then the receptionist is supposed to look at the address.

**Analyst:** Well, here’s a simple suggestion—something you can do right now, even before we get to installing a computer system for you. Why not assign each patient a number? Put that number in each patient’s folder. Then put that number on the statements as they go out and ask your patients to write the number on their check. That should make cross-referencing payments and patients much easier.

**Dr. Holmes:** Now, why didn’t I think of that?

**Analyst:** Let me summarize just a bit here, so I can be sure that I understand everything we’ve talked about so far. You’re having trouble with patient billing, but the major underlying cause of that trouble is the system you use to keep records about patients. Both patient history and patient billing records are kept in the same folder. If the folders are misfiled or lost, then the patient billing data may be inaccurate.

**Dr. Holmes:** Exactly. Can a computer help?

**Analyst:** In both cases, yes. I think you need to consider keeping patient history data and patient billing data separate—not on two computers or in two different programs, but logically separate. If you request a copy of a patient’s dental history, for example, you needn’t see the financial history as well.

**Dr. Holmes:** You mean I should have one system to record financial information and one to record medical information?

**Analyst:** They can be the same system, but they are two distinct functions that share some data. I think part of what has gotten you into trouble up to this point is mixing the two.

**Dr. Holmes:** I think I see what you mean.

**Analyst:** What about patient scheduling? Is that a problem?

**Dr. Holmes:** Not at all. The receptionist has one of those oversized scheduling books. She just writes a patient’s name in the right spot when an appointment is made. A liberal application of white-out is enough to cancel an appointment. If we’ve got to choose something that doesn’t need to be computerized, it can be patient scheduling.

**Analyst:** What if the computer system would work best if you connected scheduling to patient records and billing? Would that be a problem?

**Dr. Holmes:** Not at all. If it can be done all at once, that would be great, even if our current procedures are working.

2. Transcript of a conversation between the Analyst and the receptionist for Dr. Margaret Holmes:

**Analyst**: Dr. Holmes tells me that you’re in charge of most of the paperwork in this office.

**Receptionist**: And answering the phone, and opening the mail, and calming frightened kids, and calling people to remind them about appointments...

**Analyst**: I’m afraid I can’t help you with answering the phone, or the frightened kids, but Dr. Holmes has asked me to see what can be done to clean up the record keeping.

**Receptionist**: First of all, we need to do something about those patient record folders. I mean, I try really hard to make sure that they get put back in the right place, but I’m only human. Sometimes I make mistakes. And it gets so busy in here. I’ll have two dozen of those stupid folders on my desk, three people with six noisy kids waiting out here, the phone’ll be ringing, and then the mailman’ll come in and dump a sack of letters on top of everything. Man, those folders have got to go. I mean, once one gets lost, then we’re dead.

**Analyst**: I’m hoping that we can come up with some solution, but to find one, I need to get some information from you about how you do things.

**Receptionist**: Like what?

**Analyst**: Why don’t you pretend that a patient has just walked through the door? Tell me, step by step, exactly what you do until the time that patient leaves.

**Receptionist**: OK. First, I get the person’s name. Then I check him off in the appointment book, just so I know that he’s come in. I’ve already pulled his folder from the file—I pull the folders for all the day’s patients first thing in the morning—so all I have to do is find it in the pile on my desk. When she’s ready, Karen—that’s the dental assistant—comes out and calls the patient. After that, I don’t do anything until both Dr. Holmes and Karen are through. Whichever one was the last to see the patient gives the folder back to me. They’ve written down what they’ve done. I use my chart here to figure out how much to charge the patient, and I write the numbers in the folder. See—here’s charges and payments for the patient all right here on the each page for each appointment. Sometimes, if the charge isn’t the regular fee, Dr. Holmes writes me a little note, so I have to look carefully. Before the patient leaves I make another appointment, either for more work or a six-month check-up. At the end of the day, I write the name of every patient that we saw in this notebook; that’s so Susan knows who might need to be billed. Then I file all the folders.

**Analyst**: What happens, then, when the mail comes in?

**Receptionist**: I separate it. I set aside bills we have to pay for Susan, the accountant. I take the checks that have come in and pull the cards for each person who sent a payment. Then I write down the payment, and subtract that amount from what the person owes. Dr. Holmes got me a calculator so my figures would be right. Insurance companies sometimes send us one big check for several patients; then I have to read the letter that comes with the check very carefully, to make sure that I credit the right patients with the right amount. Oh, yeah, I have to leave out all the folders that have recorded payments for Susan; otherwise, she won’t know who’s paid. It can get pretty tricky.

**Analyst**: I bet it can. I think I’ve got a pretty good feeling for how the record keeping part of your job works.

3. Transcript of a conversation between the Analyst and Dr. Holmes’ dental assistant:

**Analyst**: I’d like you to tell me about your part in keeping patient records, if you would.

**Dental Assistant**: Well, I write in the patient folders, just like Margaret does.

**Analyst**: Where do you get the folders?

**Dental Assistant**: From the corner of the receptionist’s desk. I’m the one who gets the patient from the waiting room. I get them settled in a chair and then either leave them for Margaret, or go ahead and do whatever work I have to do. Like, if they need a cleaning or X-rays, I’ll do that before Margaret sees them. As soon as I’m done, I write down whatever I did in the folder; I leave it on the desktop in the treatment room for Margaret.

**Analyst**: Does every patient see Dr. Holmes?

**Dental Assistant**: Actually, no. Sometimes we do have people who just come in for a cleaning. For example, if they’re taking a drug like tetracycline that precipitates stains on the teeth, they might need to be cleaned once a month or so.

**Analyst**: What happens to the folder in that case?

**Dental Assistant**: Then I take it back to the receptionist. Even if I forget, I get all folders back to her by the end of the day. I always make a check of the treatment rooms before I go home.

**Analyst**: What if the receptionist goes home before you do?

**Dental Assistant**: Then I leave the folders on her desk anyway. She takes care of it in the morning.

**Analyst**: OK. I think I understand how it works. I just have one more question about treatments: Is each appointment for just one treatment?

**Dental Assistant**: Although many people probably wish it was, no, typically there are many treatments performed during a single appointment. Even a cleaning visit can involve x-rays, fluoride, tooth sealing, and sometimes even more.

**Analyst**: Got it. Thanks again for taking the time to talk with me.

4. Transcript of a conversation between the Analyst and Susan Holmes, Margaret Holmes’ sister and accountant:

**Susan Holmes**: Did you know that it was my idea that Margaret call you in?

**Analyst**: No.

**Susan Holmes**: Well, it was. She didn’t have any idea how bad things were. She wasn’t working with the figures! I’ve been trying to keep her books, but this crazy system she’s come up with for recording patient charges and payments is a major problem. If she’d ever had a course in even basic bookkeeping she’d know what she’s doing to me.

**Analyst**: What sort of system are you using right now?

**Susan Holmes**: A simple PC accounting program.

**Analyst**: You use this for the billing?

**Susan Holmes**: Yes. It can accept machine-readable input, but everything in the Margaret’s office is still kept manually so I have to key it in.

**Analyst**: Why don’t you tell me how it works, then.

**Susan Holmes**: Well, when a payment comes in, the receptionist records the amount credited to a patient’s account in the patient folder. Then she sticks the folder in a pile that’s supposed to be given to me once a week, so I know who’s paid what. But there are so many of those folders laying around the outer office that they go astray.

**Analyst**: What about the billing?

**Susan Holmes**: Talk about clumsy systems. Once a month, I get a list of all the patients who have been seen. That list is people who might be billed. I have to check each person in that list against their folders to see exactly what they owe. But who knows where the folder is? It might be in the file room, it might be in the pile of folders that have posted payments that week, it might be lost somewhere. Who knows? At any rate, once I decide what people really owe, I enter the data into my accounting program and create and print the bills. The receptionist takes care of putting them in envelopes and getting them in the mail.

**Analyst**: There’s something that’s eluding me here. How do you catch overdue bills?

**Susan Holmes**: My accounting program will do that if I look for accounts that are 30, 60, or 90 days past the original billing date. Those people have to be billed again. What I could really use is some way of capturing the original billing data electronically.

**Analyst**: I suspect that can be done …