

Team 89:
Project Code Name: Jellyfish
Members:
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<http://flip2.engr.oregonstate.edu:9888/index>

Executive Summary

There were few changes along the way we had to make to the actual structure of our project. Mostly what changed were implementation decisions. During our various opportunities to receive feedback over the course of the project we were made aware of several things. There was some confusion about the roles of all the tables and their relationships to other tables. This was mostly due to the very specific nature of the way data is created and maintained in the profession for whom this app is intended. For example, there was some confusion when the term “treatment plan” was included in our overview, but the end user knows that a treatment plan is the real-world implementation that generates the need for data to be recorded about skill progress and troublesome behaviors. To that end we did try to simplify the language to be more clear.

When it came time to begin the HTML implementation, we had only prepared a couple of pages initially, condensing a lot of information into limited spaces. We were encouraged to create more pages and break up the data. As we followed this directive, I think our app is better for it. First off it made each page less complicated to implement, this gave us a better opportunity to learn about implementing a database and front end. It also made the tool a lot less cluttered and overwhelming to an end user.

The reason our structure was robust is because it had something real to map to, I imagine this project could have been much more difficult if that were not the case. Implementation is always tricky because there is a whole world of possible ways to bring a project to life. Feedback was critical to get that part right. Getting the opinion of people who are a bit less worried about what casing method you used for the database really grounds your perspective.

Overview

Behavior intervention therapists provide services for children with various diagnoses and challenges. Each client’s care is personalized to fit their needs and must be adjusted as the client masters new skills and problem behaviors are reduced. This involves recording data reporting their progress each session and regular monitoring to adjust the goals to ensure the best possible care is being given. The traditional method of recording this data has been writing it on paper, admin staff manually entering it, and then a supervisor graphing and interpreting it. This causes a whole host of problems and has recently been replaced in most settings by Electronic Health Record (EHR) software with varying degrees of success. Implementing these tools has been primary done at a corporate level for larger agencies as EHR software is often costly to implement. Few options exist for independent providers and small agencies. Project Code Name Jellyfish will be the first tool in a suite of tools intended to meet the needs of these

unincorporated entities providing ABA (applied behavior analysis) or adjacent services modularly.

A provider in this field will typically interact with 2-3 clients per day, 5 days a week. These interactions will usually be with the same caseload of 2-6 individuals. Each case will have 3-5 skills they are working to develop and may also have 1 or 2 problem behaviors that are monitored for frequency, duration, or both. Each of these skills or behaviors will have 1-10 trials recorded for the purpose of monitoring progress. Meaning these provider will create a rough average of 350 new datapoints a week. A small agency may have 5-10 provider on staff entering 1750-3500 datapoints a week for their 62-125 appointments a week for 10-60 clients. Large agencies multiply this drastically and often also provide additional services that have similar data needs. All of this does not even account for the plethora of treatment plans, assessments, and authorizations on file for each participant required by insurance and state agencies.

Project Jellyfish will form the backbone of daily data entry for skill trials performed by the provider with the client.

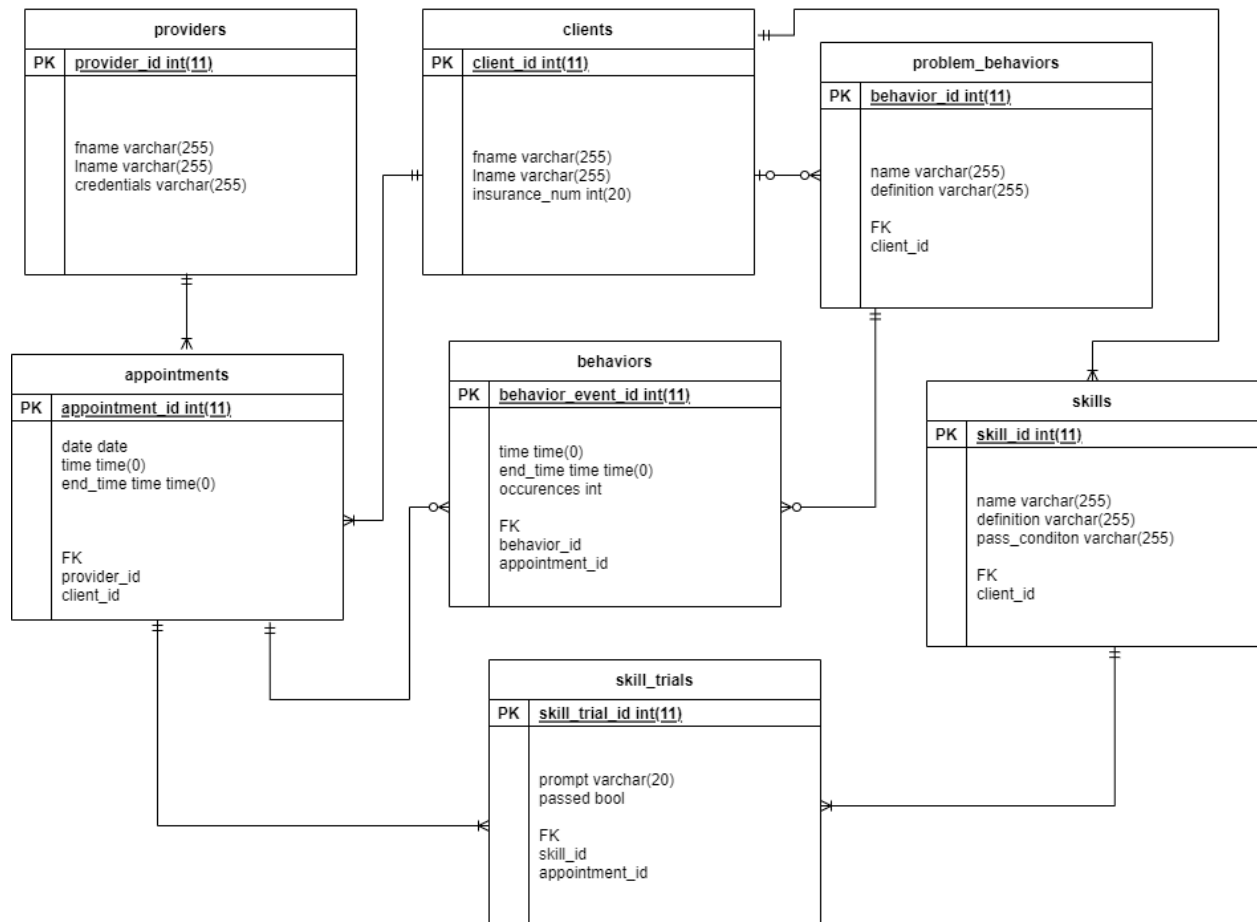
Database outline

- providers
 - Primary Key - provider_id int(11) NOT NULL AUTO_INCREMENT
 - fname varchar(255) NOT NULL
 - lname varchar(255) NOT NULL
 - credentials varchar(255) NOT NULL
 - This entity represents the therapy provider. They have a M:M relationship via appointments with clients.
- clients
 - Primary Key - client_id int (11) NOT NULL AUTO_INCREMENT
 - fname varchar(255) NOT NULL
 - lname varchar(255) NOT NULL
 - insurance_num int(20) NOT NULL
 - This entity represents the children receiving the therapy. They have a 1:M relationship with their skills and problem_behaviors.
 - They have a M:M relationship via appointments with providers.
- appointments
 - Primary Key - appointment_id int (11) NOT NULL AUTO_INCREMENT
 - date date NOT NULL
 - time time(0) NOT NULL
 - end_time time time(0) NOT NULL
 - These are the appointments that link the providers and clients via M:1 relationships with each; therefore, they use the provider_id and client_id foreign keys.
 - Appointments also have a M:M relationship with skills and problem_behaviors since it is during the appointments that these things are addressed. This is implemented with join tables representing the occurrences

of behaviors and skill_trials during the session.

- problem_behaviors
 - Primary Key - behavior_id int (11) NOT NULL AUTO_INCREMENT
 - name varchar(255) NOT NULL
 - definition varchar(255) NOT NULL
 - Behaviors are typically tracked, if they decrease it is used as evidence of the efficacy of the skill goals. They have a M:M relationship to the appointments via the related data taken by the provider. These data are recorded in the behaviors table. They have a 1:m relationship with behaviors, the occurrences of the problem behavior.
 - These problem_behaviors are linked to the client that exhibits them, the client_id is used to do this.
- skills
 - Primary Key - skill_id int(11) NOT NULL AUTO_INCREMENT
 - name varchar(255) NOT NULL
 - definition varchar(255) NOT NULL
 - pass_conditon varchar(255) NOT NULL – There is always a predefined condition that the goal will be considered passed such as '80% successful trials for 3 consecutive sessions'
 - Skill goals are assigned to each child and tracked each appointment to monitor progress. They have a M:M relationship to the appointments via the data kept in the skill_trials table. The skills have a 1:M relationship to the skill_trials.
 - These skills are linked to the client that is working on them, the client_id is used to do this as a foreign key.
- behaviors
 - Primary Key - behavior_event_id int(11) NOT NULL AUTO_INCREMENT
 - time time(0) - some behaviors are monitored by how long they last
 - end_time time time(0)
 - occurrences int – some behaviors are monitored by how many times they occur in a given period of time such as
 - This represents the actual data entries performed by providers.
 - behaviors have a M:1 relationship with problem_behaviors and appointments and reference behavior_id and appointment_id as foreign keys.
- skill_trials
 - Primary Key - skill_trial_id int(11) NOT NULL AUTO_INCREMENT
 - prompt varchar(20) - refusal, full_physical, partial_physical, model, direct_verbal, indirect_verbal, gesture, independent – each trial is often marked for how much support was provided to complete a task successfully.

- passed bool – pass fail data is sometimes taken in leu of monitoring support level
- This represents the actual data entries performed by providers.
- Skill_trials have a M:1 relationship with skills and appointments and reference skill_id and appointment_id as foreign keys.



Sample Data

Primary Key

Foreign Key

providers

provider id	fname	lname	credentials
10000000001	Edna	Krabappel	BS.IS.
10000000002	Seymore	Skinner	MA.IP.
10000000003	Miss	Wormwood	BS.IS.
10000000004	Valerie	Frizzle	PhD.IP.
10000000005	Dewey	Finn	BS.IS.

clients

client_id	fname	lname	insurance_num
100000000010	Bart	Simpson	123456789
100000000011	Nelson	Muntz	234567891
100000000012	Malcolm	Wilkerson	345678912
100000000013	Reese	Wilkerson	456789132
100000000014	Dewey	Wilkerson	567891234

appointments

appointment_id	date	time	end time	provider_id	client_id
100000000024	2022-04-25	12:00	14:30	100000000001	100000000010
100000000025	2022-04-26	15:00	18:00	100000000001	100000000011
100000000026	2022-04-27	12:00	14:30	100000000001	100000000010
100000000027	2022-04-28	15:00	18:00	100000000001	100000000011
100000000028	2022-04-29	12:00	14:30	100000000001	100000000010

problem behaviors

behavior_id	name	definition	client_id
100000000038	Defacing Property	Bart will write on surfaces that are not intended for writing	100000000010
100000000039	Eloping	Bart will leave the area where his responsible adult is without consent	100000000010
100000000040	Hitting	Nelson hits his peers when he becomes frustrated	100000000011
100000000041	Kicking	Nelson kicks his peers when he loses games	100000000011
100000000042	Name calling	Nelson calls others hurtful names	100000000011

skills

skill_id	name	definition	pass condition	client_id
100000000052	Practice coping skills	When Bart becomes frustrated, he will write or draw in a journal rather than on other surfaces	80% of the time for 5 consecutive sessions	100000000010
100000000053	Speaking respectfully to adults	When Bart is given a contrived scenario, he will demonstrate a respectful comment to an adult	80% of the time for 5 consecutive sessions	100000000010
100000000054	Wearing safety equipment when skateboarding	Bart will wear a helmet when riding his skateboard	100% of the time for 5 consecutive sessions	100000000010

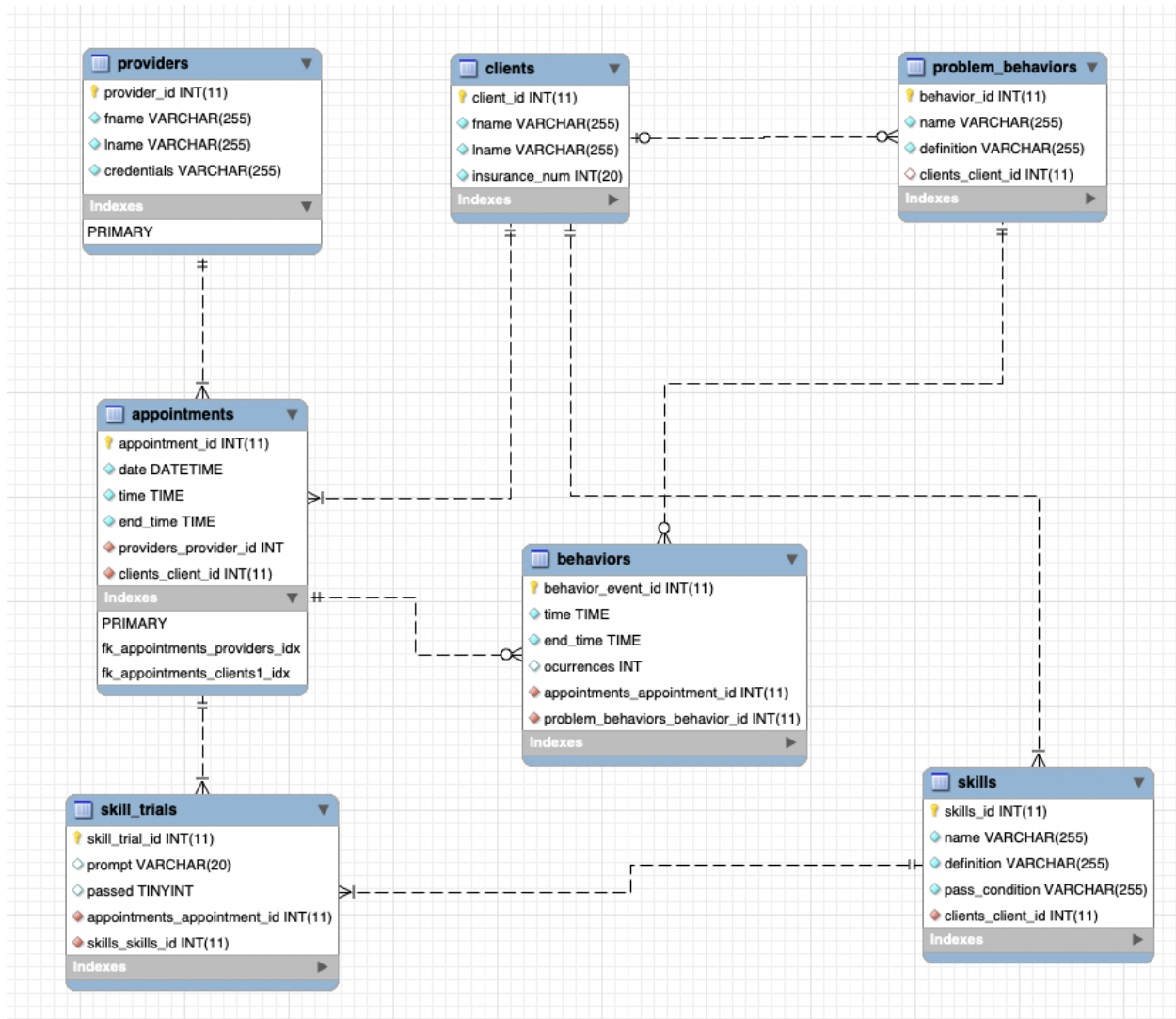
100000000055	Verbalizing his needs	Nelson will tell an adult when he needs something such as when he is hungry	80% of the time for 5 consecutive sessions 80% of the time for 5 consecutive sessions	100000000011
100000000056	Practice coping skills	Nelson will ask to take a break when he becomes frustrated	5 consecutive sessions	100000000011

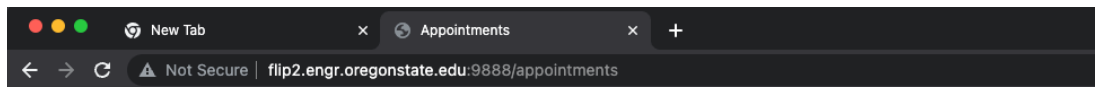
behaviors

behavior_event_id	time	end_time	occurences	behavior_id	appointment_id
100000000066			4	100000000038	100000000024
100000000067	12:45	12:55		100000000039	100000000024
100000000068			15	100000000040	100000000024
100000000069			3	100000000041	100000000025
100000000070			4	100000000042	100000000025

skill trials

skill_trial_id	prompt	passed	skill_id	appointment_id
100000000080	direct_verbal		100000000052	100000000024
100000000081	model		100000000053	100000000024
100000000082	refuse		100000000054	100000000024
100000000083		FALSE	100000000055	100000000025
100000000084	indirect_verbal		100000000056	100000000025





Appointment Schedule

READ/ADD/UPDATE/DELETE
Appointments page

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Appointments

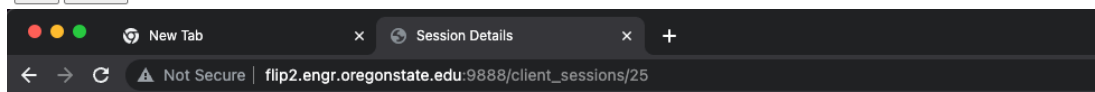
Search client_id

appointment_id	client_id	Client	Date	Time	End_Time	Provider			
25	11	Nelson Muntz	2022-03-15	2:00:00	18:00:00	Seymore Skinner	Delete	Update	Session Details
74	10	Bart Simpson	2022-06-05	23:05:00	12:15:00	Kyler Murrays	Delete	Update	Session Details
80	10	Bart Simpson	2022-06-06	19:05:00	20:05:00	Miss Wormwood	Delete	Update	Session Details
81	12	Malcolm Wilkerson	2022-06-07	7:04:00	8:05:00	Jacob Finn	Delete	Update	Session Details
82	13	Reese Wilkerson	2022-06-10	9:30:00	22:00:00	Kyler Murrays	Delete	Update	Session Details
83	10	Bart Simpson	2022-06-08	7:05:00	8:15:00	Jacob Finn	Delete	Update	Session Details

Nullable

Add Appointment

Select Client date: time: end_time: Provider



Session Details

READ/ADD/DELETE
Sessions Page

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appointment_id	date	time	end_time	providers_provider_id	clients_client_id
25	2022-03-15	2:00:00	18:00:00	2	11

skill_trial_id	prompt	passed	appointments_appointment_id	skills_skills_id	
91	full_physical	0	25	55	Delete
92	indirect_verbal	1	25	56	Delete
93	model	1	25	56	Delete

behavior_event_id	time	end_time	ocurrences	appointments_appointment_id	problem_behaviors_behavior_id	
69	0:00:00	0:00:00	3	25	41	Delete
70	0:00:00	0:00:00	4	25	42	Delete
74	22:40:00	23:40:00	5	25	40	Delete

Add skill

Name: Prompt: Passed: + ☐ - ☐ ☐

Add behavior

Name: Start time: End time: Number of occurrences:

Clients

READ/ADD/UPDATE/DELETE
Clients Page

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client_id	fname	lname	insurance_num		
10	Bart	Simpson	123456789	Edit	Delete
11	Nelson	Muntz	234567891	Edit	Delete
12	Malcolm	Wilkerson	345678912	Edit	Delete
13	Reese	Wilkerson	456789132	Edit	Delete
14	Dewey	Wilkerson	331131311	Edit	Delete
17	Sean	Clark	1	Edit	Delete

Add Client

First Name: Last Name: Insurance Number:

Providers

READ/ADD/UPDATE/DELETE
Providers Page

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provider_id	fname	lname	credentials		
2	Seymore	Skinner	MA.IP.	Edit	Delete
3	Miss	Wormwood	BS.IS.	Edit	Delete
4	Valerie	Frizzle	PhD.IP.	Edit	Delete
5	Jacob	Finn	BS IS	Edit	Delete
6	Roger	Vega	BSMA	Edit	Delete
7	Kyler	Murrays	QB	Edit	Delete

Add provider

First Name: Last Name: Credentials:

READ/ADD/DELETE
Skills page

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Skills

skills_id	name	definition	pass_condition	clients_client_id	
52	Practice coping skills	When Bart becomes frustrated, he will write or draw in a journal rather than on other surfaces	1	10	Delete
53	Speaking respectfully to adults	When Bart is given a contrived scenario, he will demonstrate a respectful comment to an adult	1	10	Delete
54	Wearing safety equipment when skateboarding	Bart will wear a helmet when riding his skateboard	1	10	Delete
55	Verbalizing his needs	Nelson will tell an adult when he needs something such as when he is hungry	1	11	Delete
56	Practice coping skills	Nelson will ask to take a break when he becomes frustrated	1	11	Delete
58	coping skills	when he becomes frustrated	1	11	Delete
60	Practice coping skills	When Bart becomes frustrated, he will write or draw in a journal rather than on other surfaces	1	10	Delete
62	Verbalizing his needs	Bart will tell an adult when he needs something such as when he is hungry	1	10	Delete
63	Verbalizing his needs	when he becomes frustrated	1	14	Delete

Add skill

Name: Definition: Pass condition: Client:

Behaviors

READ/ADD/DELETE
Behaviors page

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Behaviors

behavior_id	name	definition	clients_client_id	
38	Defacing Property	Bart will write on surfaces that are not intended for writing	10	Delete
39	Eloping	Bart will leave the area where his responsible adult is without consent	10	Delete
40	Hitting	Nelson hits his peers when he becomes frustrated	11	Delete
43	Kicking	Nelson kicks his peers when he loses games	10	Delete
45	Defacing Property	Dewey will write on surfaces that are not intended for writing	14	Delete

Add behavior

Name: Definition: Client: