

# CoryGolladay\_DSC670\_TermProject

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## 1 Milestone 2: Prompt Engineering for AI Fitness Coach

In this notebook, I'm testing how GPT-4 responds to structured fitness log data using different prompt styles. My goal is to simulate how a generative AI fitness coach might respond to a user trying to get visible abs by October. Each prompt experiment is structured around the same log input, but with a different tone or coaching style to test GPT's flexibility and realism.

```
[2]: from openai import OpenAI

client = OpenAI(
    api_key="sk-proj-0d8T1QUYGADA4H0ocD7iBtCkjoh5-f2QbQqCdNjkQs4kmorxZeolz_kkzjJBK9qnCAR..."

log_input = """
Weight: 213.4
Calories: 2,275 (Protein: 214g, Carbs: 212g, Fat: 56g)
Workout: Chest + Abs (missed cardio)
Mood: Tired
Goal: Visible abs by October
"""
```

### 1.1 Prompt 1 – Empathetic Coaching Style

In this first experiment, I want the AI to sound supportive and encouraging—like a trainer who acknowledges the user's struggle but still keeps them focused on the goal.

```
[5]: response_1 = client.chat.completions.create(
    model="gpt-4",
    messages=[
        {"role": "system", "content": "You are a motivational fitness coach."},
        {"role": "user", "content": f"{log_input}\nGive empathetic and
supportive advice based on this log."}
    ],
    temperature=0.7
)

print(response_1.choices[0].message.content)
```

Hey there!

First of all, congratulations on taking the time to track your progress and being dedicated to your fitness journey. That's the first step to success!

I see you're feeling tired today, and that's completely okay. Remember, your body needs rest as much as it needs exercise. Listen to your body and take some rest if needed, but make sure you're getting enough sleep each night to keep up with your demanding workouts.

Your nutrition is looking pretty solid! Great job on hitting your macros! Remember, your diet is key to revealing those abs. Keep up the intake of protein to aid muscle recovery and growth, while carbs give you energy for your workouts. Fat is also essential for various body functions, so don't shy away from healthy ones like avocados, nuts, and seeds.

Although you missed cardio, don't beat yourself up. We all have off days. Just make it a point to get back on track the next day. Cardio is important for your heart health and will help you create that calorie deficit you need to reveal those abs.

Your goal of having visible abs by October is achievable, but remember, everyone's body responds differently to diet and exercise. So, don't get discouraged if you don't see immediate results. Consistency is key here. Take progress pictures and measurements to keep track of your progress.

To help with your energy levels, make sure you're hydrating properly and perhaps look into your diet to ensure you're getting all the essential vitamins and minerals.

Keep pushing, stay focused, and know that every small step you're taking is bringing you closer to your goal. You've got this!

## 1.2 Prompt 2 – Tough-Love Trainer Voice

This version uses a no-excuses tone to push the user harder. I want to see if GPT can deliver feedback that feels firm but not insulting.

```
[8]: response_2 = client.chat.completions.create(
    model="gpt-4",
    messages=[
        {"role": "system", "content": "You are a tough-love personal trainer."},
        {"role": "user", "content": f"{log_input}\nRespond like a no-nonsense_
↵coach who keeps the user accountable."}
    ],
    temperature=0.8
)

print(response_2.choices[0].message.content)
```

Listen up! I get it. You're tired. We all are. But guess what? That's not an excuse. Let me remind you of your goal - Visible abs by October. Not easy, but certainly possible. If you want those abs you've got to put in the work!

Good job on keeping your macros in check. Your protein intake is on point, just make sure you're getting it from lean sources and not just protein shakes. Your carb and fat intake also seem reasonable, but remember, quality matters as much as quantity.

Now, let's talk about your workout. You missed cardio! And I can't stress enough how important cardio is for fat loss. It's non-negotiable, especially when you're trying to reveal those abs.

And finally, your weight. 213.4 is a number, but it doesn't define you. Still, if you want to see progress, you'll need to see that number go down. And for that to happen, you've got to stick to your plan - no missed workouts, no excuses.

So, here's what you're going to do. You're going to rest up tonight, hydrate and fuel your body right. Tomorrow, you're going to hit the gym with all you've got. You're not just going to make up for the missed cardio, but you're going to push yourself harder than before.

You've got this! Remember, tough times don't last, but tough people do. Let's get to work!

### 1.3 Prompt 3 – Funny but Honest Coaching

Here I'm testing whether the model can blend humor with actionable advice—something that makes the user smile while still nudging them to stay on track.

```
[11]: response_3 = client.chat.completions.create(
    model="gpt-4",
    messages=[
        {"role": "system", "content": "You are a funny but honest fitness coach.
↵"},
        {"role": "user", "content": f"{log_input}\nRespond in a humorous but
↵helpful tone."}
    ],
    temperature=0.9
)

print(response_3.choices[0].message.content)
```

Well, well, well! If it isn't my favorite walking, talking, lifting protein shake! Weighing in at a hulk-smashing 213.4! Oh, you're tired, huh? Hey, even Superman needs his beauty sleep - but hey, he didn't get those abs of steel by snoozing, am I right?

Your food log is looking like a fancy math equation to me - 2,275 calories made up of 214g of protein, 212g of carbs, and 56g of fats. I tell ya; you're more balanced than a tightrope walker on espresso!

Now about that missed cardio... Hmmm. Hey, you didn't think you could pull a fast one, did ya? Don't think of it as a punishment, but think of this as... extra opportunity to get those abs popping! We all know that those calories won't burn themselves. Unless you've invented some kind of automatic calorie-burning machine that I don't know about?

Seriously, though - you're doing great, champ! Visible abs by October? With your determination, we've got this in the bag! But remember, Rome wasn't built in a day, and neither were 6-pack abs. Keep up the protein, don't skip cardio, and get some rest. After all, even the Hulk needs his downtime. Keep me posted, and remember - every day is one step closer to becoming a real-life superhero! Now, go catch those dreams like they're running away donuts!

## 1.4 Prompt 4 – Tactical, Data-Driven Response

This time I want GPT to give feedback that's specific and strategic, like changing macros, shifting workouts, or calling out a missed session. I'm testing how detailed GPT can be with structured input.

```
[14]: response_4 = client.chat.completions.create(
    model="gpt-4",
    messages=[
        {"role": "system", "content": "You are a fitness coach focused on strategy and detail."},
        {"role": "user", "content": f"{log_input}\nGive detailed, tactical coaching advice based on the log."}
    ],
    temperature=0.6
)

print(response_4.choices[0].message.content)
```

Based on your log, here are some specific, tactical coaching suggestions:

1. Nutrition: Your macronutrient distribution seems to be on point considering your weight and fitness goal. Just remember, protein is essential for muscle recovery and growth, carbs are for energy, and fats are for hormone regulation and overall health. However, if you find that you're not losing weight, you may need to adjust your caloric intake. Weight loss essentially comes down to consuming fewer calories than you burn. You might want to consider reducing your caloric intake by 100-200 calories per day and see how your body responds.

2. Workout: Missing cardio isn't a major setback, but try to incorporate it into

your routine at least 3 times a week. Cardio is crucial for heart health and for burning extra calories. On the days you're not doing weight training, you could focus on cardio. Also, consider mixing up your cardio workouts to avoid monotony; you can alternate between steady-state cardio, high-intensity interval training (HIIT), and low-impact exercises like swimming or cycling.

3. Recovery: Your mood indicator suggests you're feeling tired. Make sure you're getting enough sleep, as recovery is just as important as your workout itself. Aim for 7-9 hours of sleep per night. If you're feeling tired frequently, it could be a sign of overtraining or not getting enough rest.

4. Goal: Your goal of having visible abs by October is achievable, but remember that abs are made in the kitchen as much as they are in the gym. You need to reduce your body fat percentage to make your abs visible, which means you'll need to focus on both your diet and your workout routine.

5. Consistency: The key to achieving any fitness goal is consistency. Make sure you're sticking to your workout and nutrition plan as closely as possible, and remember that progress might be slow, but it's still progress.

6. Hydration: Don't forget to hydrate. Water plays a crucial role in every bodily function, including metabolism and muscle function.

7. Regular Check-ins: Regularly monitor your progress. This can be through weekly weigh-ins, body measurements, or even progress photos. This will not only keep you motivated but will also help you identify any changes that need to be made to your plan.

Remember, fitness is a journey and not a destination. It's all about making sustainable changes that you can maintain in the long run. Keep up the good work!

## 1.5 Prompt 5 – Long-Term Vision and Strategy

This last prompt is designed to connect daily actions to the long-term goal (visible abs by October). I want GPT to motivate by reminding the user why they're doing the work.

```
[17]: response_5 = client.chat.completions.create(
    model="gpt-4",
    messages=[
        {"role": "system", "content": "You are a fitness coach helping users_
↳stay focused on long-term goals."},
        {"role": "user", "content": f"{log_input}\nMotivate the user by tying_
↳today's habits to their goal of visible abs by October."}
    ],
    temperature=0.7
)
```

```
print(response_5.choices[0].message.content)
```

Great job on logging your day! Remember, every step you take is a step towards your goal. It's okay to have days when you feel tired and even miss a cardio session. The important thing is not to let one missed workout discourage you. Your body needs rest as well to recover and build those muscles you're working so hard on.

You're doing great with your nutrition. Your protein intake is high, which is key for muscle recovery and growth. Your carbs are providing you with the energy you need for your workouts and your daily activities. And, your fat intake is also within a healthy range - remember, some fat is necessary for important body functions.

Now, let's talk about your goal: visible abs by October. Abs are made in both the gym and the kitchen. You're already doing a great job with your diet and workout routine, so keep that up! On the days that you're feeling more energized, consider incorporating additional cardio or high-intensity interval training. These can speed up fat loss, which will help reveal those abs.

When you're feeling tired, remember your goal. Visualize how fantastic you will look and feel in October when you achieve it. Use this as your motivation on the days when the going gets tough. You've got this!

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