



The
University
Of
Sheffield.

Build an Alexa skill for Amazon Echo Gym Buddy

By

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The Importance of Gym Workout Planning


Gym workout planning is crucial for achieving fitness goals. Without a plan, individuals may find themselves wandering around the gym aimlessly, not knowing what exercises to do or how many sets and reps to perform. This can lead to a lack of progress and even injury.

According to a study by the American Council on Exercise, individuals who followed a workout plan were more likely to stick with their exercise routine and see results compared to those who did not have a plan. In addition, having a plan allows individuals to track their progress and make adjustments as needed to continue making gains.



Functions provided by Gym Buddy skill

- *Generate weekly workout plan based on fitness goal and fitness level*
- *Demonstrate instructions for workouts*
- *Recording/Logging the workout*
- *Refresh and get new workout timely*
- *Guide through workouts*

gymbuddy

Sanjaykumar
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SETTINGS


DISABLE SKILL

Start By Saying
"Alexa open gym buddy"
"send my workout plan"
"refresh my workout"
"send my workout progress"

Key Features:

Customized Workouts: Get tailored workout plans based on your fitness level, goals.

Exercise Demos: Access step-by-step instructions for each exercise, ensuring proper form and technique.

Workout Tracking: Keep track of your progress, including reps, sets, and weights used, all by simply asking Alexa.



Design of the skill





New user

Skill testing is enabled in: Development

Alexa Simulator Manual JSON Voice & Tone

English (US) Type or click and hold the mic

gym buddy

Welcome to the Gym Workout Planner. We will start by creating a profile for you. how old are you?

i am twenty four years old

Got it. you are 24 years old, what is your gender, male or female.

i'm a male

Noted your gender as male . What is your height in centimetres.

i'm one seventy five centimeters tall

Skill testing is enabled in: Development

Alexa Simulator Manual JSON Voice & Tone

English (US) Type or click and hold the mic

i'm one seventy five centimeters tall

Alright. your height is 175 centimetres, what's your weight in kilograms.

my weight is seventy one kilograms

Noted! your weight is 71 kilograms and your bmi is 23.18. your fitness goal falls under which category, Muscle gain or weight loss?

+ my fitness goal is muscle gain

Cool! How would you rate your current fitness level as, Beginner or Intermediate or Expert?

+ i'm an intermediate

Based on your Fitness level and Fitness Goal, a personalized workout plan has been mailed to you.

- A user profile is established by collecting essential demographic and fitness-related information, including age, gender, height, weight, current fitness level, and desired fitness goals.
- To provide an appropriate workout plan, the database is scanned to identify a comparable user profile. Subsequently, workout plan is recommended that has proven effective for user with similar profile.
- If no closely matching user profile is available in the database, a data-driven approach is used to generate workout plan, which is tailored specifically to the individual's fitness level and desired fitness objectives.

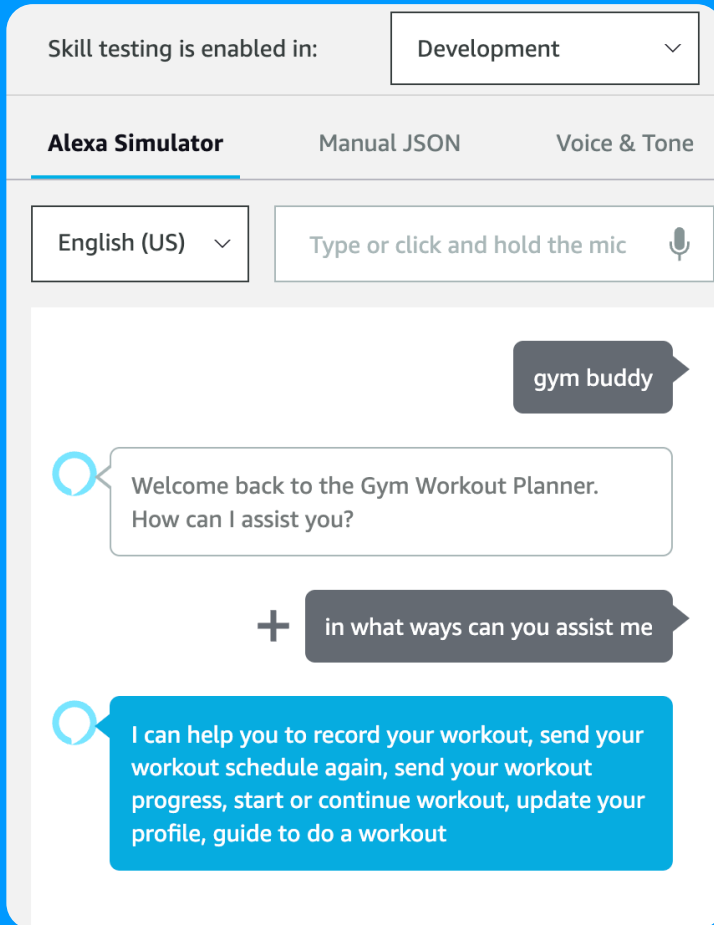


Recommender System Implementation

```
2023-08-29T12:48:11.742Z      f061e588-58d5-47a0-806f-5ec01a61c1d1      INFO      New user: {  
  userId:  
    'amzn1.ask.account.AMAUCHQD4NEEK5GGK3L63H66ZS4BSNK6FWOG6LFI6GH5W7VFWHALHWHUHWZZ7M6YXVHTSCJQC70GSLSLDCWIBGR0567GMXQ372BI6GV544672GNGOBEY7WJLLXNJU3VRRFVQ6TDGTWU4RDSME4WFEWSESD5N3EJUOWNPFFHNZVPA7GOYTR3NWKMXOKNSSP3ZXQCTJU2N06P2HP5Q2XLNZM65RKI2AAIQI3EJ5SR2QSJNSQ',  
  personId: 'null',  
  age: '24',  
  gender: 'male',  
  height: '175',  
  weight: '71',  
  bmi: '23.18',  
  fitnessGoal: 'muscle gain',  
  fitnessLevel: 'intermediate'  
}  
  
▼ 2023-08-29T13:48:11.743+01:00      2023-08-29T12:48:11.743Z f061e588-58d5-47a0-806f-5ec01a61c1d1      INFO      Most similar user: { userId: 'amzn1.a...  
  
2023-08-29T12:48:11.743Z      f061e588-58d5-47a0-806f-5ec01a61c1d1      INFO      Most similar user: {  
  userId:  
    'amzn1.ask.account.AMAUCHQD4NEEK5GGK3L63H66ZS4BSNK6FWOG6LFI6GH5W7VFWHALHWHUHWZZ7M6YXVHTSCJQC70GSLSLDCWIBGR0567GMXQ372BI6GV544672GNGOBEY7WJLLXNJU3VRRFVQ6TDGTWU4RDSME4WFEWSESD5N3EJUOWNPFFHNZVPA7GOYTR3NWKMXOKNSSP3ZXQCTJU2N06P2HP5Q2XLNZM65RKI2AAIQI3EJ5SR2QSJNSQ',  
  height: '179',  
  fitnessGoal: 'muscle gain',  
  createdAt: '2023-08-29T12:42:18.523Z',  
  fitnessLevel: 'intermediate',  
  bmi: '23.72',  
  gender: 'male',  
  weight: '76',  
  age: '26',  
  personId: 'nullB'  
}  
}
```

The attributes of new user such as age, gender, BMI, fitness level and fitness goal are used to compare similarity among other users and most similar user is found. This recommender system operates by suggesting a workout plan that is linked to the similar user to the new user. The idea behind this assumption is that if a user with a high degree of similarity finds their current workout plan helpful, a new user with a high degree of similarity may also find that workout plan useful.

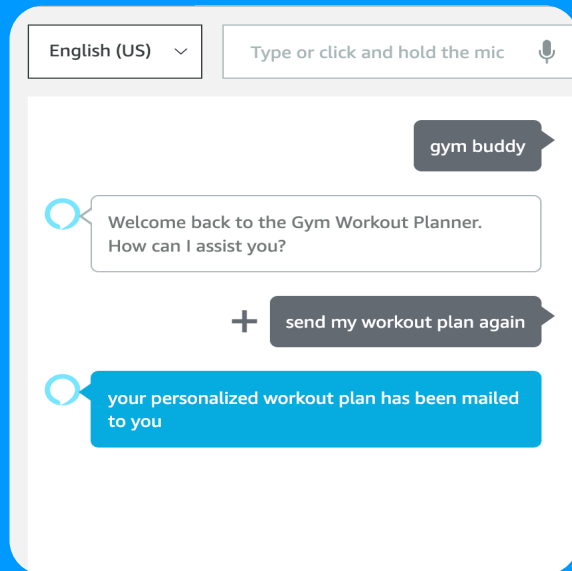
Existing User



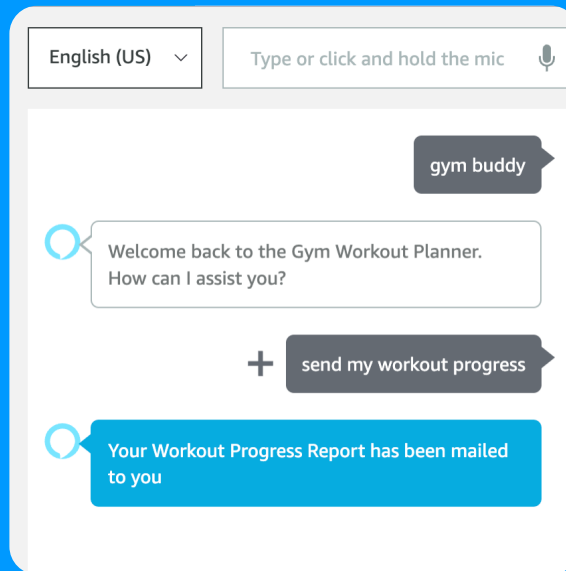
- *If the user is an existing user, all available options are enabled for the user to use.*



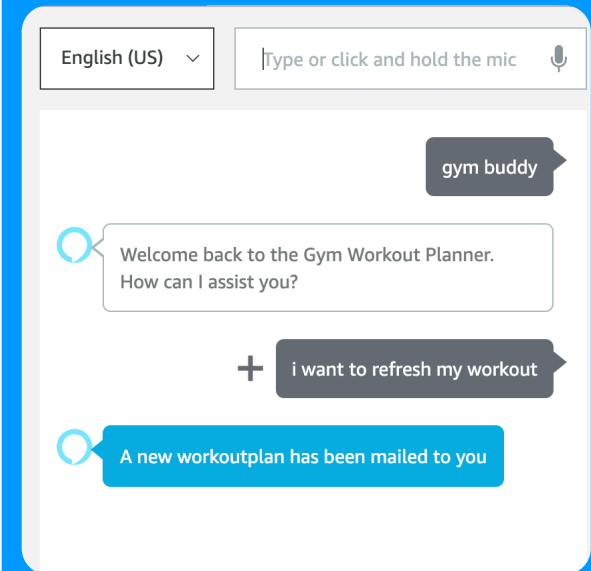
Available options



Resend workout plan



Get workout progress



Refresh workout plan

Available options

Alexa Simulator Manual JSON Voice & Tone

English (US) Type or click and hold the mic

+ i want to record a workout

what type of workout was it, Strength or Cardio?

+ strength

what was the workout?

+ i did pushups

how many sets of Pushups did you do?

+ three sets

how many reps did you do for each set?

Alexa Simulator Manual JSON Voice & Tone

English (US) Type or click and hold the mic

how many sets of Pushups did you do?

+ three sets

how many reps did you do for each set?

+ ten reps each set

Noted! if you wanna record one more workout, try saying 'record next workout' or 'stop' to finish recording

+ stop

workouts has been recorded

Conversation flow for 'recording a workout'



Available options

English (US) ▾ Type or click and hold the mic

gym buddy

Welcome back to the Gym Workout Planner.
How can I assist you?

+ how to do incline hamer culs

I'll help you with some instructions for Incline Hammer Curls, Seat yourself on an incline bench with a dumbbell in each hand. You should pressed firmly against he back with your feet together. Allow the dumbbells to hang straight down at your side, holding them with a neutral grip. This will be your starting position. Initiate the movement by flexing at the elbow, attempting to keep the upper arm stationary. Continue to the top of the movement and pause, then slowly return to the start position.

Workout instructions

English (US) ▾ Type or click and hold the mic

gym buddy

Welcome back to the Gym Workout Planner.
How can I assist you?

+ i want to update my profile

Based on your profile,you are male and 24 years old. your height is 175 centimetres, weight is 71 kilograms and your BMI is 23.18. your fitness goal is muscle gain and current fitness level is intermediate.

+ change my fitness level to beginner

Alright. Your fitnessLevel has been updated to beginner, Since your fitnessLevel has changed, new workoutplan has been mailed to you

Update profile

English (US) ▾ Type or click and hold the mic

gym buddy

Welcome back to the Gym Workout Planner.
How can I assist you?

start the workout

start the workout with Bodyweight Flies doing 3 sets of 10 reps, say "next workout" after you complete this workout. if you want to know instructions for this workout, try saying "instruct me"

next workout

next workout is Slow Jog for 10 mins, say "next workout" after you complete this workout. if you want to know instructions for this workout, try saying "instruct me"

Workout session



Workout Schedule

Day	Workout	Target	Sets&Reps/Time
Monday	Bicycling	cardio	20 mins
	Jumping rope	cardio	20 mins
	Pushups	chest	4 sets of 12 reps
	Decline Dumbbell Flyes	chest	4 sets of 12 reps
	Dumbbell Flyes	chest	4 sets of 12 reps
	Dumbbell Bench Press	chest	4 sets of 12 reps
	Wide-Grip Decline Barbell Bench Press	chest	4 sets of 12 reps
Tuesday	Close-grip pull-down	lats	4 sets of 12 reps
	Weighted pull-up	lats	4 sets of 12 reps
	Single-arm kneeling lat pull-down	lats	4 sets of 12 reps
	Pullups	lats	4 sets of 12 reps
	Machine-assisted pull-up	lats	4 sets of 12 reps
	Bicycling	cardio	20 mins
	Jumping rope	cardio	20 mins
Wednesday	Single-Leg Press	quadriceps	4 sets of 12 reps
	Cable Deadlifts	quadriceps	4 sets of 12 reps
	Weighted Jump Squat	quadriceps	4 sets of 12 reps
	Bicycling	cardio	20 mins
	Jumping rope	cardio	20 mins
	Barbell Full Squat	quadriceps	4 sets of 12 reps
	Weighted Squat	quadriceps	4 sets of 12 reps
Thursday	Wide-grip barbell curl	biceps	4 sets of 12 reps
	Hammer Curls	biceps	4 sets of 12 reps
	Bicycling	cardio	20 mins
	Jumping rope	cardio	20 mins
	EZ-bar spider curl	biceps	4 sets of 12 reps
	Flexor Incline Dumbbell Curls	biceps	4 sets of 12 reps
	Concentration curl	biceps	4 sets of 12 reps
Friday	Decline Dumbbell Triceps Extension	triceps	4 sets of 12 reps
	Triceps dip	triceps	4 sets of 12 reps
	Push-Ups - Close Triceps Position	triceps	4 sets of 12 reps
	Bicycling	cardio	20 mins
	Jumping rope	cardio	20 mins
	Seated Bent-Over One-Arm Dumbbell Triceps Extension	triceps	4 sets of 12 reps
	Decline EZ-bar skullcrusher	triceps	4 sets of 12 reps
Saturday	Rest Day		
Sunday	Rest Day		

Progress Report

Day	Workout	Sets&Reps/Time
September 2, 2023	Push-Ups - Close Triceps Position	3 sets of 10 reps
	Decline Dumbbell Triceps Extension	3 sets of 12 reps
	Triceps dip	4 sets of 12 reps
	Bicycling	20 minutes
September 3, 2023	Pushups	3 sets of 10 reps
	Incline Hammer Curls	3 sets of 12 reps
	Hammer Curls	4 sets of 12 reps
	Bicycling	20 minutes

Sample workout plan of user with fitness goal as 'muscle gain' and fitness level of 'intermediate'

Sample workout progress report



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Thank you