

# **Nike Shoe Recommender and Fitness Quotient**

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## Abstract:

Nike Shoe recommender is an expert system built in Jess that provides recommendation of Shoes based on type of activity that person practices, gender and price range of user. The system also advises of how much fit is the person is based on the BMI index and fat percentage.

## Features:

- The system takes input from the user for the type of activity that user is fond of (eg basketball, soccer, tennis etc) , what is the persons gender and what is the price range that the user prefers and based on the input the system recommends some shoes to the user
- The system takes age, height and weight for calculation of fitness quotient of each individual and recommends weight to be reduced and amount of fat % in the body.
- Particularly the system recommends shoes for Nike as it contains the all the data for a single shoe manufacturer but it can be extended to any sport or fitness industry based on their factors.
- The system also can classify individuals based on different obesity levels based on the Body mass index for individuals
- The system suggests individuals to how much weight needs to be gained or lost based on normal BMI index of 18.5

**Rules and Description:**

#	Rule Name	Description	References and links
1	welcome	To give welcome banner to the user	
2	ask-question-by-id	to ask a question and assert it answer to the answer template	
3	request-budget	To ask range of budget for the user. There are two price ranges	
4	request-gender	To ask gender of the user	
5	request-activity	to ask activity of the user (ie: Basketball , Soccer , Running, Training , Tennis )	
6	request-weight	to ask weight of the user	
7	request-age	to ask the user for its age	
8	assert-user-fact	for asserting user fact from answer template to user template	
9	calculate-bmi-rating	it calculates BMI index , BMI rating , categorizes different body types, computes the fat percent and calculates the fat to be lost or gained based on different body types	<a href="#">BMI WIKI</a> <a href="#">Body Fat percentage</a>
10	recommend-1	it recommends shoes for specific category related to (male)(running )(range B)	<a href="#">Nike Shoes</a>
11	recommend-2	it recommends shoes for specific category related to (male)(running )(range A)	<a href="#">Nike Shoes</a>
12	recommend-3	it recommends shoes for specific category related to (male)(basketball)(range B)	<a href="#">Nike Shoes</a>
13	recommend-4	it recommends shoes for specific category related to (male)(basketball)(range A)	<a href="#">Nike Shoes</a>
14	recommend-5	it recommends shoes for specific category related to (male)(soccer)(range A)	<a href="#">Nike Shoes</a>
15	recommend-6	it recommends shoes for specific category related to (male)(soccer)(range B)	<a href="#">Nike Shoes</a>
16	recommend-7	it recommends shoes for specific category related to (male)(training )(range A)	<a href="#">Nike Shoes</a>
17	recommend-8	it recommends shoes for specific category related to (male)(training )(range B)	<a href="#">Nike Shoes</a>
18	recommend-10	it recommends shoes for specific category related to (male)(tennis )(range A)	<a href="#">Nike Shoes</a>
19	recommend-11	it recommends shoes for specific category related to (male)(tennis )(range B)	<a href="#">Nike Shoes</a>
20	recommend-12	it recommends shoes for specific category related to (female)(running )(range B)	<a href="#">Nike Shoes</a>
21	recommend-13	it recommends shoes for specific category related to (female)(running )(range A)	<a href="#">Nike Shoes</a>
22	recommend-14	it recommends shoes for specific category related to (female)(basketball)(range A)	<a href="#">Nike Shoes</a>
23	recommend-15	it recommends shoes for specific category related to (female)(soccer)(range B)	<a href="#">Nike Shoes</a>
24	recommend-16	it recommends shoes for specific category related to (female)(soccer)(range A)	<a href="#">Nike Shoes</a>

25	recommend-17	it recommends shoes for specific category related to (female)(tennis)(range A)	<a href="#">Nike Shoes</a>
26	recommend-18	it recommends shoes for specific category related to (male)(tennis)(range B)	<a href="#">Nike Shoes</a>
27	recommend-19	it recommends shoes for specific category related to (female)(training )(range A)	<a href="#">Nike Shoes</a>
28	recommend-20	it recommends shoes for specific category related to (female)(training)(range B)	<a href="#">Nike Shoes</a>

## Usage Manual

### Instructions

Copy files nike\_recommender.clp to the bin folder of jess directory

Open jess and execute the following commands

(batch nike\_recommender.clp)

## Validation and Assumptions

The system validates the input like age, gender, height, weight and price range

- The age is assumed to be of numeric type so it only accepts numeric value
- The gender is assumed to be either male or female so system accepts value of male or female
- Height is assumed to be in numeric and in inches, so that the calculations related to BMI , body obese type and fat percentage are calculated correctly.
- System takes only two values A or a ; B or b for the price range
- Weight is assumed to be in kgs and system accepts numerical value only.
- Although the system currently support only 5 ( running, basketball, soccer , training, tennis ) categories for activity and shoe recommendation but the scope can be expanded by adding more rules related to it.

## Future Score

- In future the recommender system can be expanded by using machine learning techniques that uses past history of users to make it more intuitive
- Although the project recommend shoes it can be extended to any sports industry or any categorization tasks that can be reduced to simple rule based.

## Sample Runs

### Run #1

It accepts all the input from the user (like name, age , height, weight , activity etc)so no assert command is required.

```

C:\Jess71p2\bin>jess.bat

Jess, the Rule Engine for the Java Platform
Copyright (C) 2008 Sandia Corporation
Jess Version 7.1p2 11/5/2008

This copy of Jess will expire in 15 day(s).
Jess> (batch nike_recommender.clp)

Please and enter your name Xavier

*****
Hello Xavier.
Welcome to Nike shoes recommender
Please answer some question and
I will recommend you some shoes based on your liking
*****

What is your height
Please enter height in inches <1 foot = 12 inches> 78

Please enter your age 70

Please enter your weight 120
What activities do you prefer
<Shoes have following category based on activity>
< running, basketball, training, soccer, tennis > basketball
What is the rough budget for your shoes
Which range of shoes price would you prefer,
  A. <$35-$150>
  B. <$150-$350>
Please enter one of the range from above <A or B> B
What is your gender? < male or female > male

XavierI would like to recommend following shoes
1.Nike LeBRon <$220> 2.Nike Air Jordan <$190> 3.Kobe AD <$180>

*****
Those shoes will also look great while working out
You are Obese Class I based on the BMI rating
and have 37.7698224852071 of fat percentage
To be in perfect shape you would require to lose 37.48574999999998 kg
So start working out those fat with those nike shoes16
Jess>

```

## Run #2

The function is-type perform basic validation on the input so doing a one more run with different set of values.

```

C:\WINDOWS\system32\cmd.exe - jess.bat
Jess> <batch nike_recommender.clp>

Please and enter your name Wolverine

*****
Hello Wolverine.
Welcome to Nike shoes recommender
Please answer some question and
I will recommend you some shoes based on your liking
*****

What is your height
Please enter height in inches <1 foot = 12 inches> sad
What is your height
Please enter height in inches <1 foot = 12 inches> 70

Please enter your age sdd
Please enter your age 45

Please enter your weight dsfd
Please enter your weight i dont know

Please enter your weight 80
What activities do you prefer
<Shoes have following category based on activity>
< runnning, basketball, training, soccer, tennis > formal
What activities do you prefer
<Shoes have following category based on activity>
< runnning, basketball, training, soccer, tennis > training
What is the rough budget for your shoes
Which range of shoes price would you prefer,
  A. <$35-$150>
  B. <$150-$350>
Please enter one of the range from above <A or B> a
What is your gender? < male or female > 1
What is your gender? < male or female > 2
What is your gender? < male or female > m
What is your gender? < male or female > female

WolverineI would like to recommend following shoes- <for Women>
1.Nike zoom volley <$115> 2.Nike cheer scorpion <$85> 3.Nike air zoom condition
<$64.97>

*****
Those shoes will also look great while working out
You are Pre-Obese based on the BMI rating
and have 36.296938775510206 of fat percentage
To be in perfect shape you would require to lose 13.543750000000003 kg
So start working out those fat with those nike shoes16
Jess>

```

So the parameter of age, height and weight are assumed of numeric type so it would not accept any character values. The price range has to be of A or B category although the system can accept lower case values. Similarly, the activity has to be from only the ones mentioned (ie. running, basketball, training, soccer, tennis)



## Test Cases:

Test cases are supposed to be input values to the system only

- Name: Wolverine  
Height: 70  
Weight: 96  
Age: 45  
Gender: male  
Activity: tennis  
Price range: B
- Name: Tinker  
Height: 75  
Weight: 45  
Age: 20  
Gender: female  
Activity: running  
Price range: A
- Name: Lily  
Height: 45  
Weight: 85  
Age: 21  
Gender: female  
Activity: basketball  
Price range: B
- Name: Bella  
Height: 62  
Weight: 65  
Age: 23  
Gender: female  
Activity: soccer  
Price range: A
- Name: Tulip  
Height: 52  
Weight: 99  
Age: 21  
Gender: female  
Activity: training

Price range: A