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1 C:\Users\Ravioli\PycharmProjects\NovaBot\venv\Scripts
  \python.exe C:/Users/Ravioli/PycharmProjects/NovaBot/
  Main.py
2 Booting Up...
3 The Chat Bot has loaded. Type 'goodbye' to exit
4 Hello. My name is Nova, the astronomy Chat Bot.
  Pleased to meet you
5 Input: hey
6 Nova: Hey! Glad to see you
7
8 Input: how fast does the earth spin?
9 Nova: It spins approximately 1600 km/hr
10
11 Input: how many planets are in our solar system?
12 Nova: There are 8 planets in our solar system
13
14 Input: what is the largest planet in our solar system
  ?
15 Nova: Jupyter
16
17 Input: what is the smallest planet in our solar
  system?
18 Nova: Pluto
19
20 Input: what is an astronomical unit?
21 Nova: It is the average distance from the center of
  the Sun to the center of the Earth. It is about 149.6
  million kilometers
22
23 Input: how old is the universe?
24 Nova: We believe the universe is about 13.8 billion
  years old
25
26 Input: what are the types of galaxies?
27 Nova: There are elliptical, spiral and irregular
  galaxies
28
29 Input: how old is the earth?
30 Nova: The Earth is about 4.54 billion years old
31
32 Input: what are the types of star clusters?
33 Nova: There are open clusters and globular clusters.
  Open clusters are modestly-sized and globular
  clusters are densely packed.
```

34

35 Input: what is the categorization of our sun?

36 Nova: Our Sun is a G-type main sequence star. G2V to be specific.

37

38 Input: what is a light year?

39 Nova: A light year describes the distance that light travels in one year

40

41 Input: what is a parsec?

42 Nova: It is the distance at which the mean radius of the earth's orbit subtends an angle of one second of arc.

43

44 Input: when will our sun die?

45 Nova: Our Sun will die in approximately 4.5 billion years and turn into a white dwarf

46

47 Input: what kind of galaxy is the milky way?

48 Nova: The Milky Way is a spiral galaxy

49

50 Input: how long does it take for light to travel from the sun to the earth?

51 Nova: Light takes about 8.3 minutes to travel from the Sun to the Earth

52

53 Input: what is the diameter of the milky way?

54 Nova: The Milky Way has a diameter of approximately 100,000 light years

55

56 Input: how many planets are in our solar system?

57 Nova: There are 8 planets in our solar system

58

59 Input: which planet is closest to the sun?

60 Nova: Mercury

61

62 Input: what is a black hole?

63 Nova: A black hole is a region in spacetime where gravity is so strong that not even light can escape

64

65 Input: how long does it take earth to rotate on its axis?

66 Nova: It takes Earth about 24 hours for Earth to rotate on its axis

67
68 Input: what are stars made of?
69 Nova: Stars are mostly made of hydrogen and helium
70
71 Input: what is nuclear fusion?
72 Nova: It is a processes by which the Sun fuses
hydrogen atoms to form helium
73
74 Input: what is a white dwarf?
75 Nova: It is the collapsed remnant core of a low-mass
star that has ejected its outer layers and can no
longer sustain nuclear fusion
76
77 Input: what is a moon?
78 Nova: A moon is an object that orbits a planet
79
80 Input: what is the coldest planet?
81 Nova: Pluto is the coldest planet. Its average
temperature is about -233 degrees celsius
82
83 Input: what is the hottest planet?
84 Nova: Venus is the hottest planet. Its average
temperature is about 471 degrees celsius
85
86 Input: what is a leap year?
87 Nova: It is a year that has 366 days instead of 365
. It occurs every 4 years.
88
89 Input: what is gravity?
90 Nova: It is one of the four fundamental forces
91
92 Input: what is dark matter?
93 Nova: It is matter that we infer exist from its
gravitational effects but from which we have not
detected any light
94
95 Input: how many moons does earth have?
96 Nova: 1 moon
97
98 Input: why does the moon shine?
99 Nova: The moon shines because it reflects the light
from the Sun
100
101 Input: what is the nearest galaxy to the milky way?

```
102 Nova: Andromeda. It is about 2 million light years  
    away from Earth  
103  
104 Input: goodbye  
105 Nova: See you soon!  
106  
107 Process finished with exit code 0  
108
```

File - main

```
1 C:\Users\Haneen\Miniconda3\envs\COSC310-ChatBot\  
  python.exe C:/Users/Haneen/Desktop/COSC310/COSC310_A2  
  /Code/main.py  
2 [nltk_data] Downloading package wordnet to  
3 [nltk_data]      C:\Users\Haneen\AppData\Roaming\  
  nltk_data...  
4 [nltk_data]   Package wordnet is already up-to-date!  
5 [nltk_data] Downloading package punkt to  
6 [nltk_data]      C:\Users\Haneen\AppData\Roaming\  
  nltk_data...  
7 [nltk_data]   Package punkt is already up-to-date!  
8 [nltk_data] Downloading package stopwords to  
9 [nltk_data]      C:\Users\Haneen\AppData\Roaming\  
  nltk_data...  
10 [nltk_data]   Package stopwords is already up-to-date  
  !  
11 Booting Up...  
12 The Chat Bot has loaded. Type 'goodbye' to exit  
13 Hello. My name is Nova, the astronomy Chat Bot.  
  Pleased to meet you  
14 Input: nice to meet you too  
15 Nova: Do you have astronomy questions for me?  
16 Input: What do you know?  
17 Nova: Only 12 people  
18  
19 Input: I am confused  
20 Nova: I do not understand your question  
21 Input: Same here bro  
22 Nova: Hey! Glad to see you  
23  
24 Input: I am not glad to see you, you suck  
25 Nova: Do you have astronomy questions for me?  
26 Input: no  
27 Nova: I do not understand your question  
28 Input: you are dumb  
29 Nova: I do not understand your question  
30 Input: goodbye  
31 Nova: See you soon!  
32  
33 Process finished with exit code 0  
34
```

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```
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11 Booting Up...  
12 The Chat Bot has loaded. Type 'goodbye' to exit  
13 Hello. My name is Nova, the astronomy Chat Bot.  
  Pleased to meet you  
14 Input: hello  
15 Nova: Hello! I am Nova.  
16  
17 Input: what is a nutron star?  
18 Nova: Stars are mostly made of hydrogen and helium  
19  
20 Input: I asked about nutron stars  
21 Nova: Stars are mostly made of hydrogen and helium  
22  
23 Input: okay what is a parsek  
24 Nova: Hey! Glad to see you  
25  
26 Input: what is a parsek  
27 Nova: I do not understand your question  
28 Input:
```