

AN INTRODUCTION TO LINEAR AC-DC POWER SUPPLIES

Yasser Jemli



WHAT IS AN AC-DC POWER SUPPLY ?

- An AC-DC power supply converts AC electricity from a wall outlet into DC electricity that a sensitive electronic device can use
- Alternating current : AC stands for alternating current Which means the current constantly changes direction, Main electricity is an AC supply , and Tunisia mains supply is about 230V. It has a frequency of 50Hz (50 hertz) , which means it changes direction and back again 50 times a second. It's better for transporting current over long distances , which is why we use it for mains electricity.
- Direct current : DC stands for direct current which means the current only flows in one direction.Batteries and electronic devices like TVs, computers and DVD players use DC electricity -once an AC current enters a device,it's converted to DC A typical battery supplies around 1.5 volts of DC .

EXAMPLES OF AC-DC POWER SUPPLIES

Go!

LAPTOP POWER ADAPTER



PHONE CHARGER



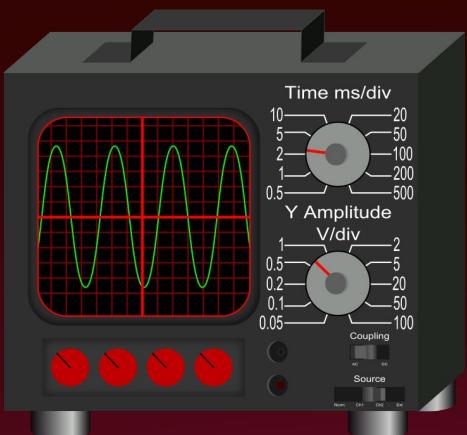
DESKTOP PC POWER SUPPLY



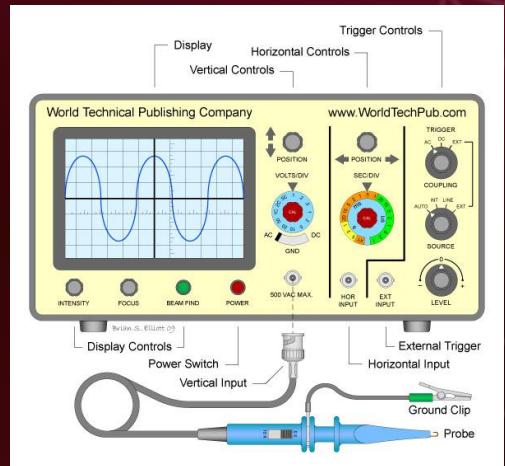
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USING AN OSCILLOSCOPE

An oscilloscope is an instrument which allows us to view changes in voltage over time

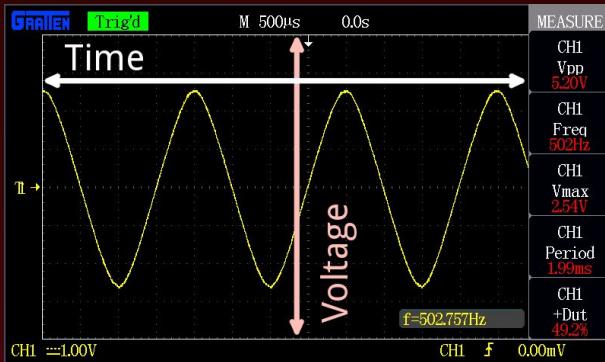


Go!



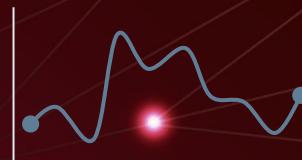


USING AN OSCILLOSCOPE

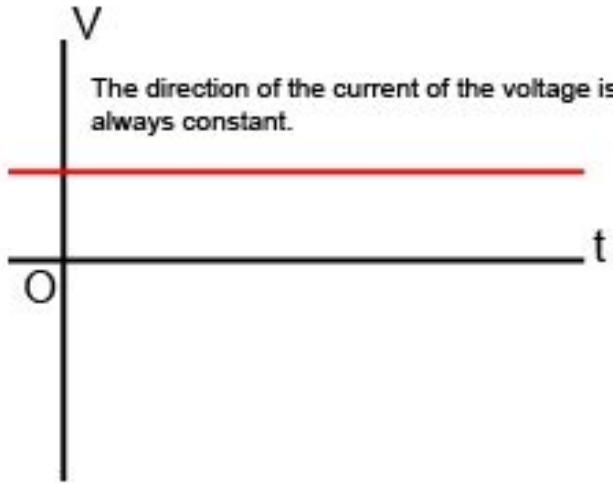


- Time is on the x-axis
- Voltage is on the y-axis
- Each horizontal or vertical line is an increment of either unit.

Go to proteus isis



Direct Current (DC)



DIRECT CURRENT (DC)

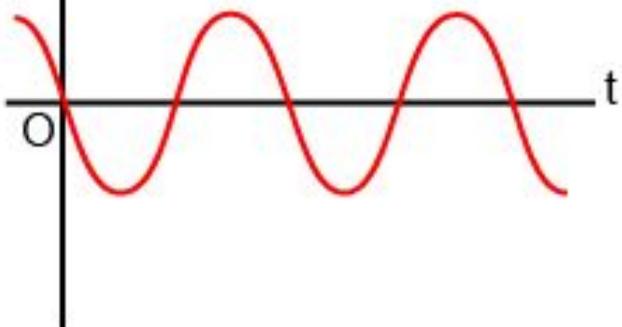
The direction of current is always the same because the voltage always remains greater than 0

Go!

Alternating Current (AC)

V

The direction of the current is always switched periodically, and the voltage is also switched.

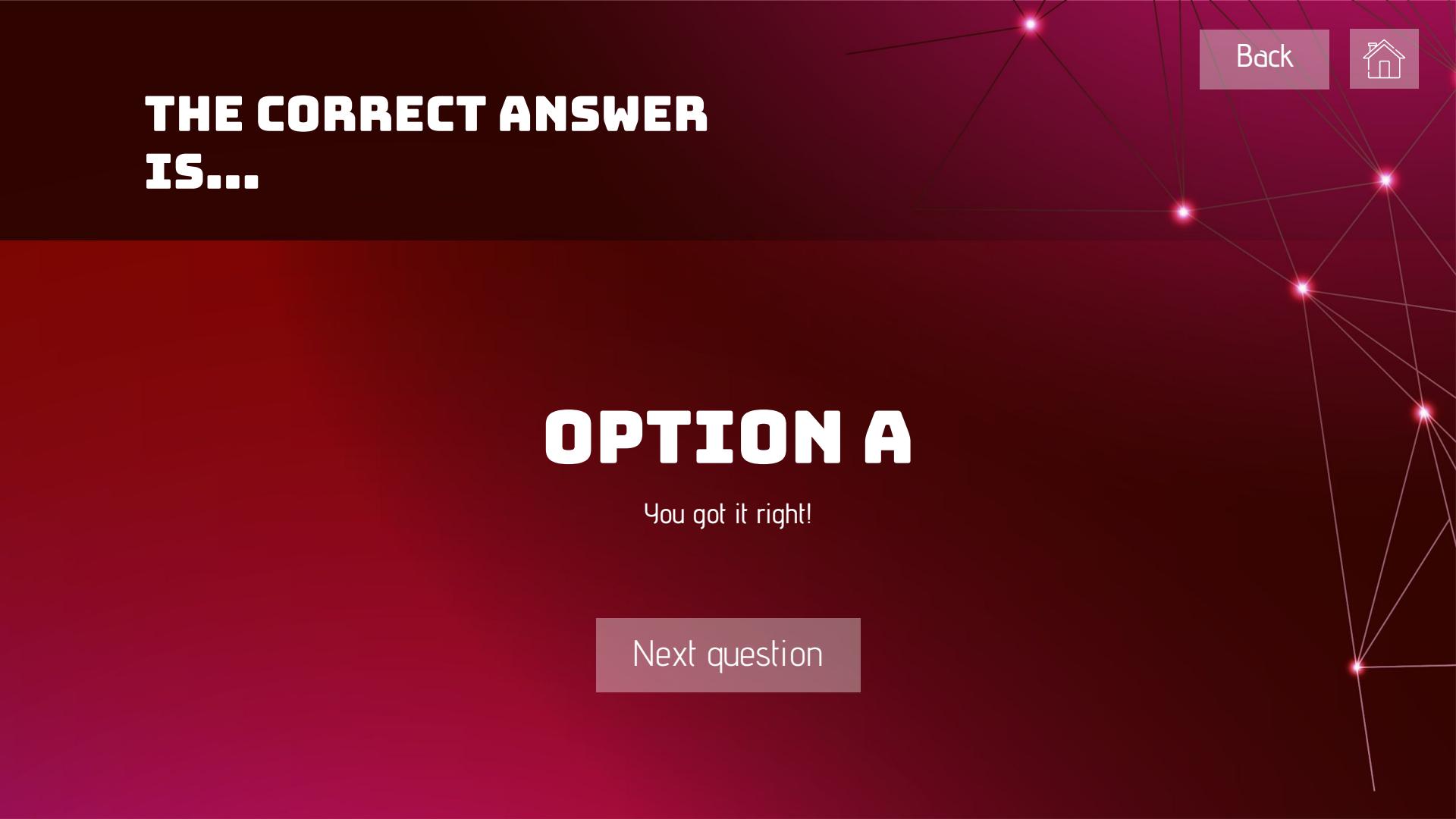


ALTERNATING CURRENT (AC)

The direction of current is constantly changing because the voltage is constantly passing through 0V

Remember V & I are proportional

Go!

A complex network diagram is visible in the background, consisting of numerous small, glowing red dots connected by thin white lines, resembling a star or network graph.

Back

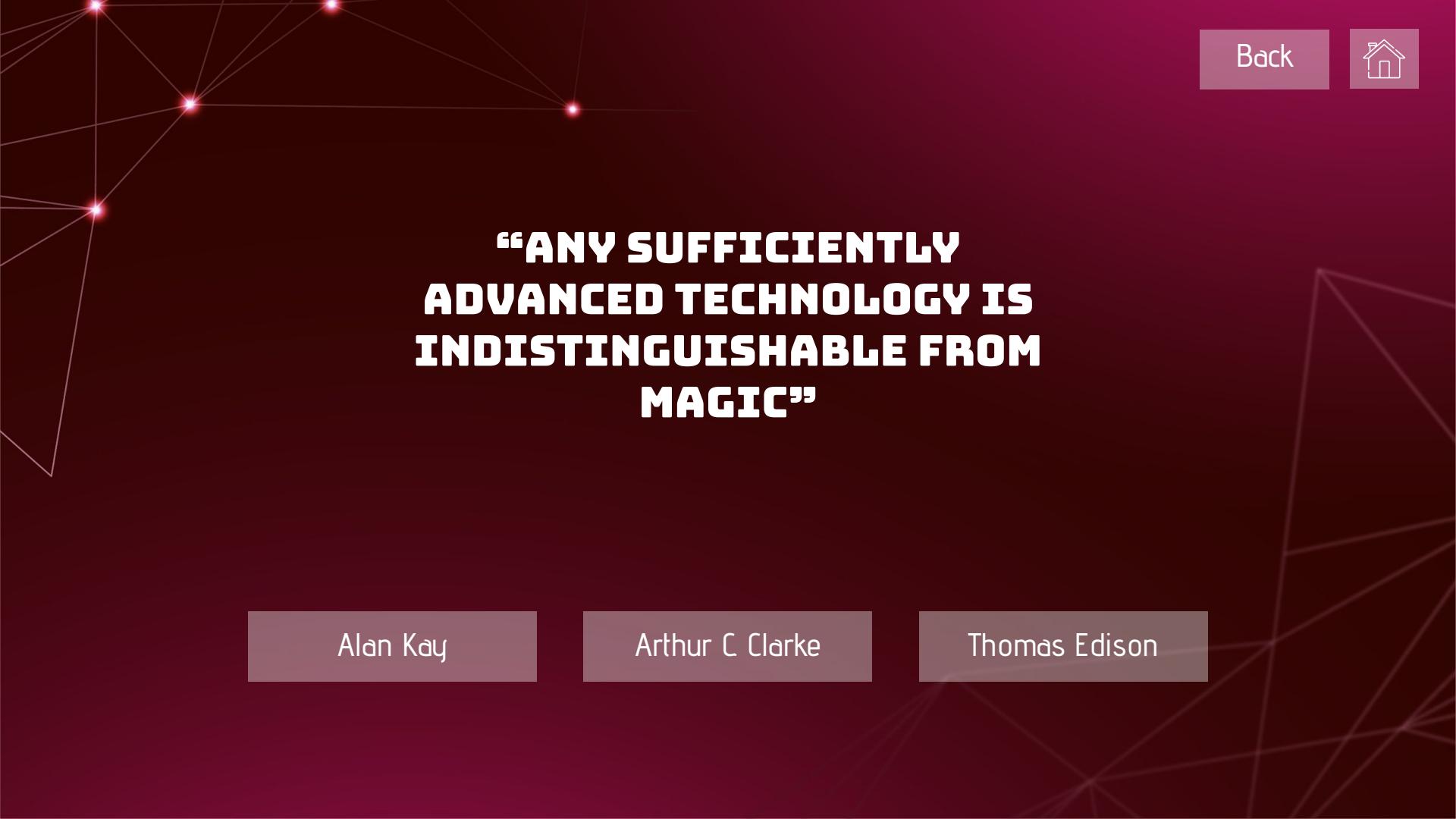


**THE CORRECT ANSWER
IS...**

OPTION A

You got it right!

Next question



Back

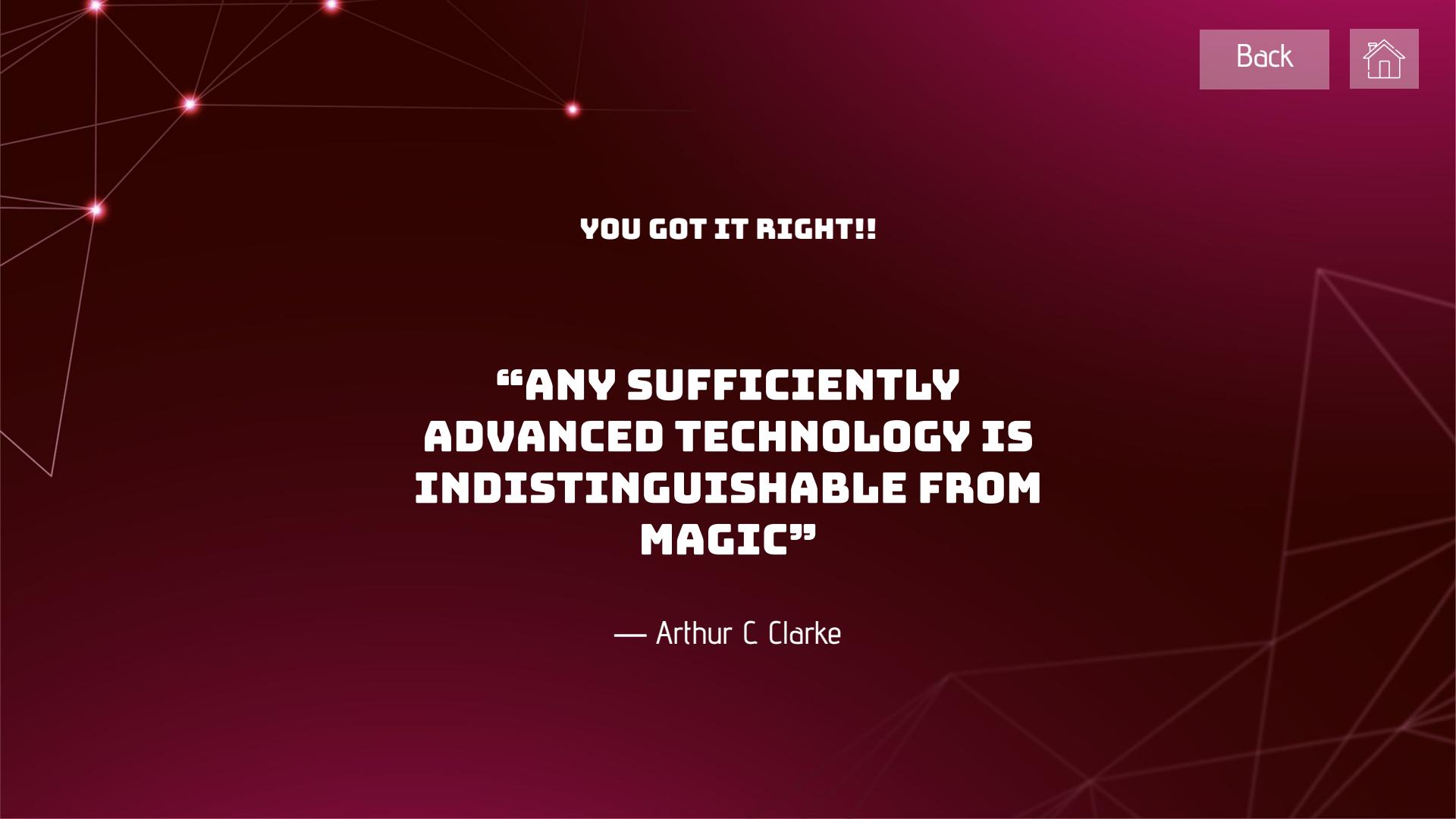


**“ANY SUFFICIENTLY
ADVANCED TECHNOLOGY IS
INDISTINGUISHABLE FROM
MAGIC”**

Alan Kay

Arthur C Clarke

Thomas Edison

A dark red background featuring a network graph composed of numerous thin white lines connecting small, glowing red dots. The dots are more concentrated in the upper left and lower right areas.

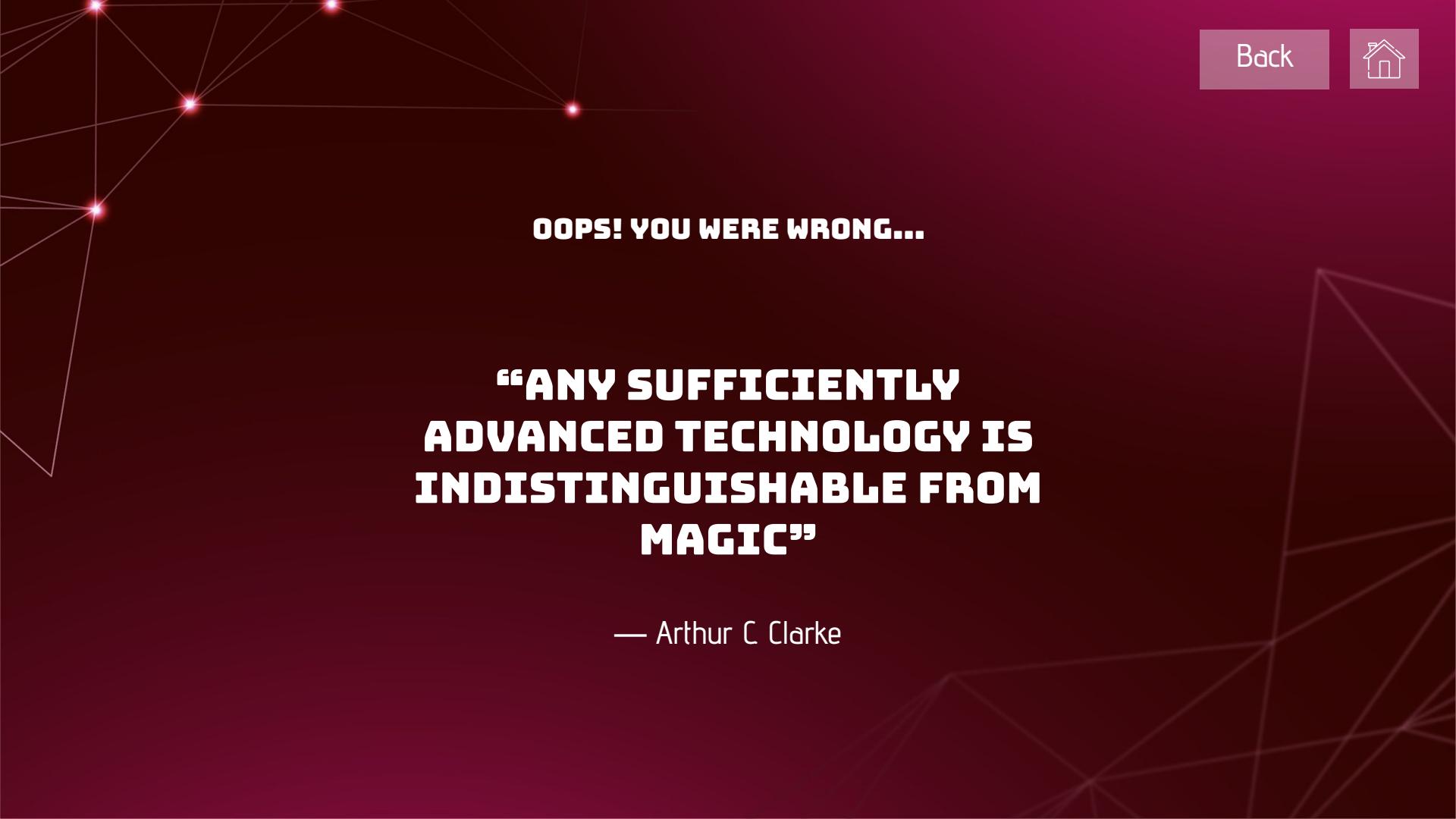
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YOU GOT IT RIGHT!!

**“ANY SUFFICIENTLY
ADVANCED TECHNOLOGY IS
INDISTINGUISHABLE FROM
MAGIC”**

— Arthur C Clarke

A faint, abstract network graph is visible in the background, consisting of numerous thin white lines connecting small red circular nodes.

Back



OOPS! YOU WERE WRONG...

**“ANY SUFFICIENTLY
ADVANCED TECHNOLOGY IS
INDISTINGUISHABLE FROM
MAGIC”**

— Arthur C Clarke

THESE ARE THE OPTIONS...

Back



OPTION A

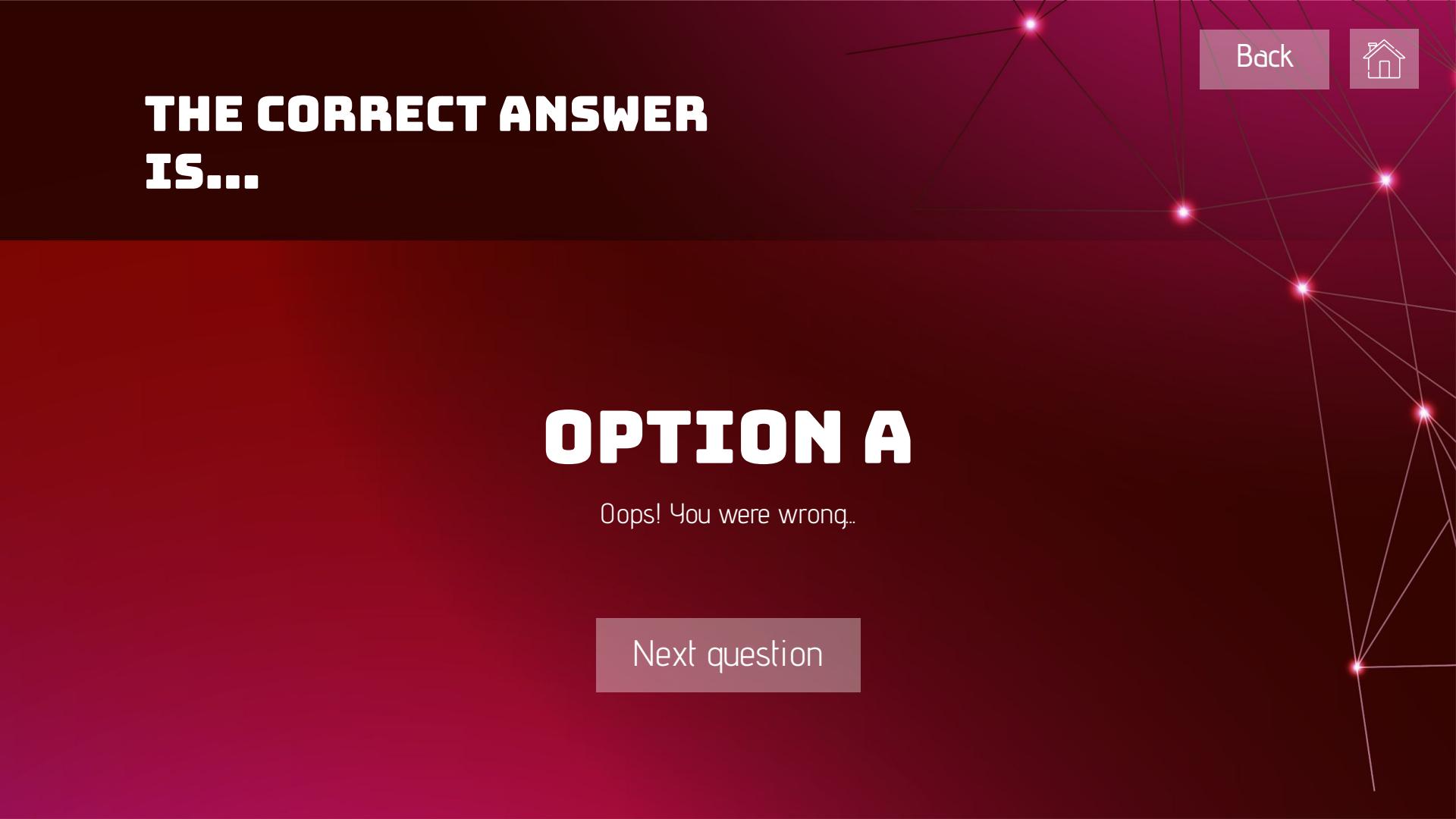
Mercury is the closest planet to the Sun and the smallest one in the Solar System

Select

OPTION B

Venus has a beautiful name and is the second planet from the Sun

Select

A complex network diagram is visible in the background, consisting of numerous small, glowing red circular nodes connected by thin gray lines forming a web-like structure.

Back



**THE CORRECT ANSWER
IS...**

OPTION A

Oops! You were wrong..

[Next question](#)



Back



WRITE HERE A QUESTION ABOUT THE IMAGE

Choose answer



Back



THESE ARE THE OPTIONS...

OPTION A

Despite being red, Mars is actually a cold place full of iron oxide dust

Select

OPTION B

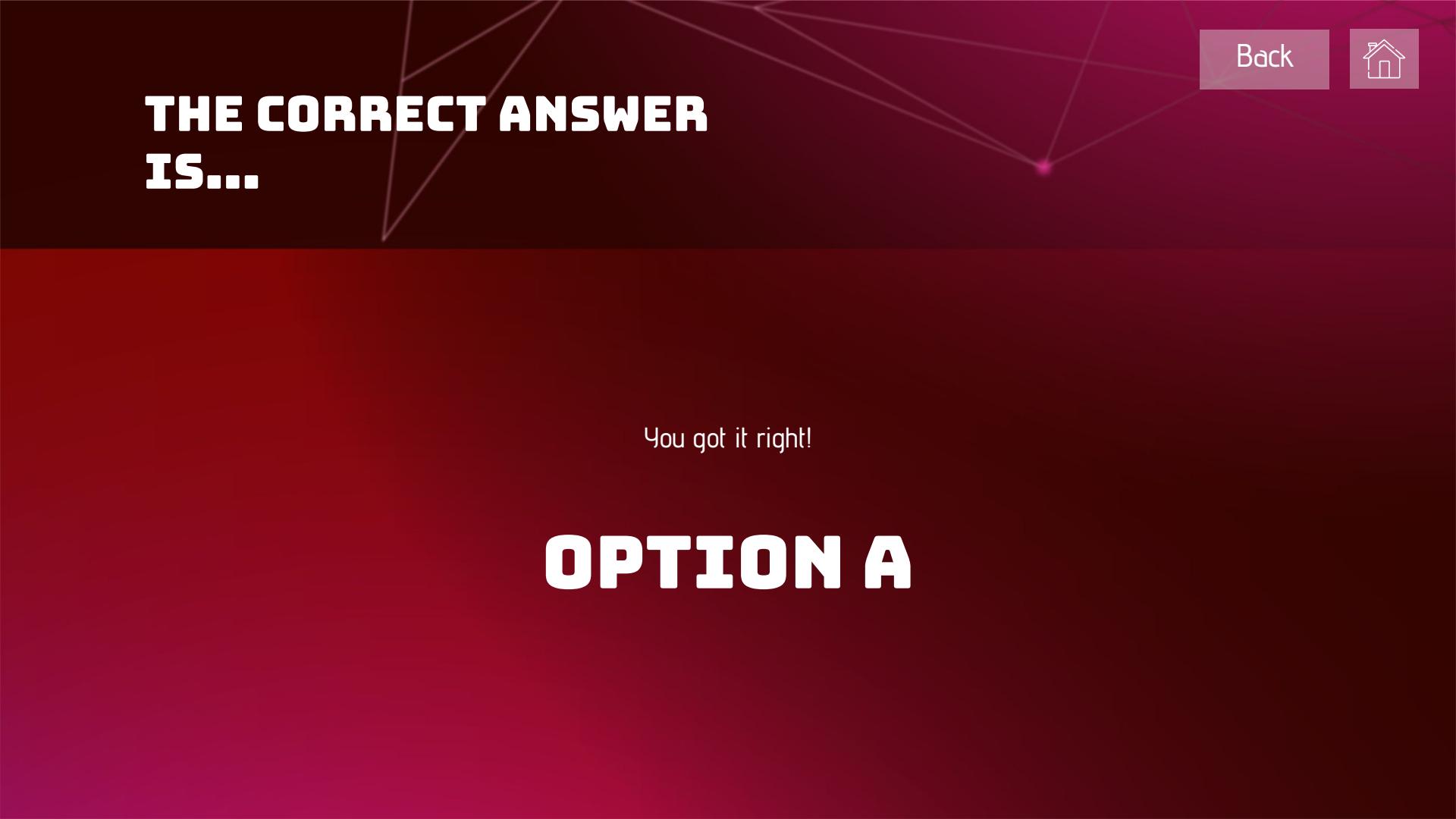
Jupiter is a gas giant and the biggest planet in the Solar System

Select

OPTION C

Saturn is composed mostly of hydrogen and helium

Select

A faint, light-gray network diagram is visible in the background, consisting of numerous thin gray lines connecting small white dots. A single prominent red dot is positioned at the exact center of the diagram.

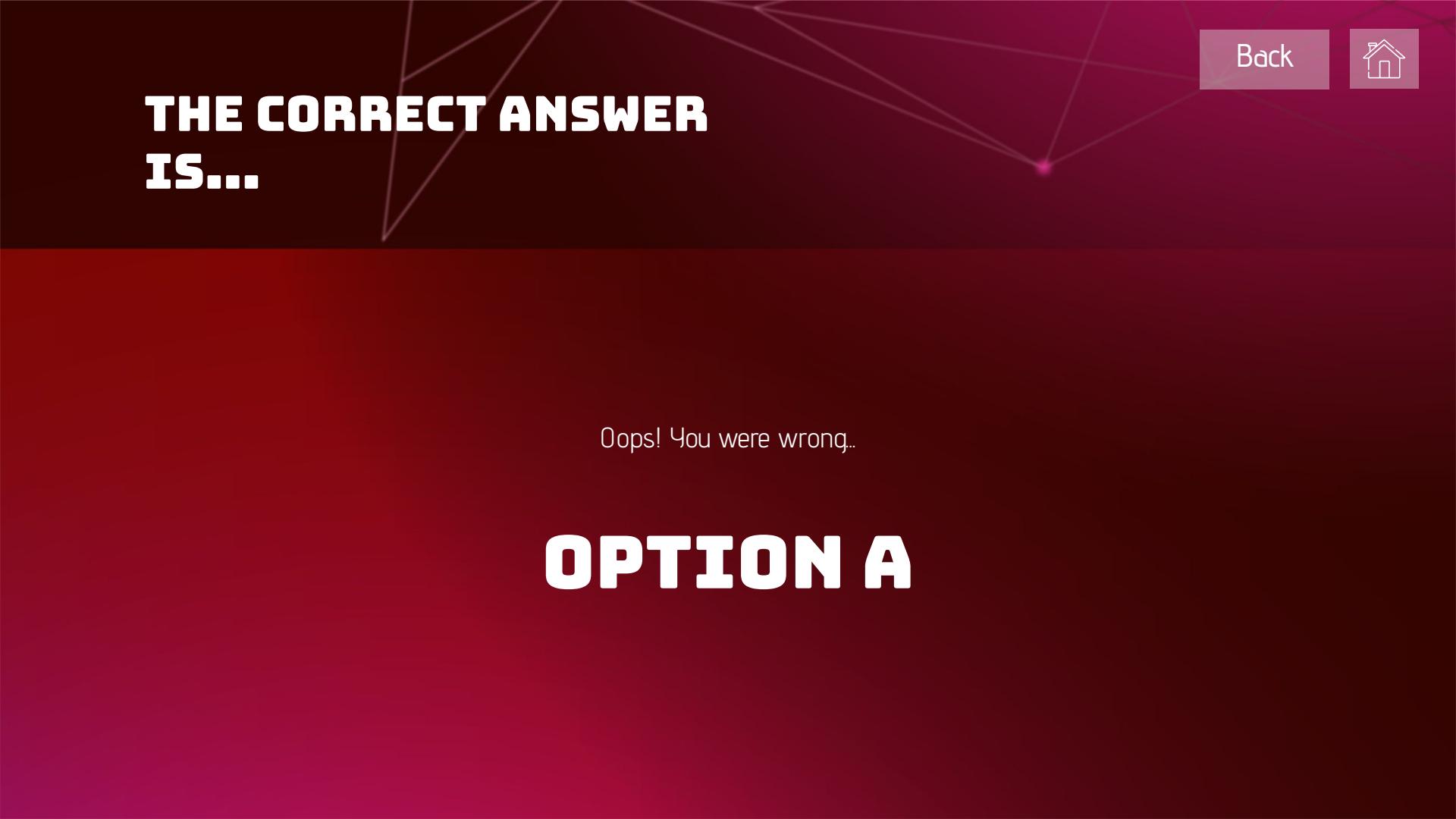
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**THE CORRECT ANSWER
IS...**

You got it right!

OPTION A

A faint, light-gray network diagram is visible in the background, consisting of numerous thin gray lines connecting small white dots. A single prominent red dot is located at the exact center of the image.

Back



THE CORRECT ANSWER IS...

Oops! You were wrong..

OPTION A



A PICTURE ALWAYS REINFORCES THE CONCEPT

Review concepts with interactive data and questions

Go!



A faint, semi-transparent network graph is visible in the background, consisting of numerous small red glowing nodes connected by thin white lines.

Back



AWESOME WORDS

Do you know about these?

Trend Graph

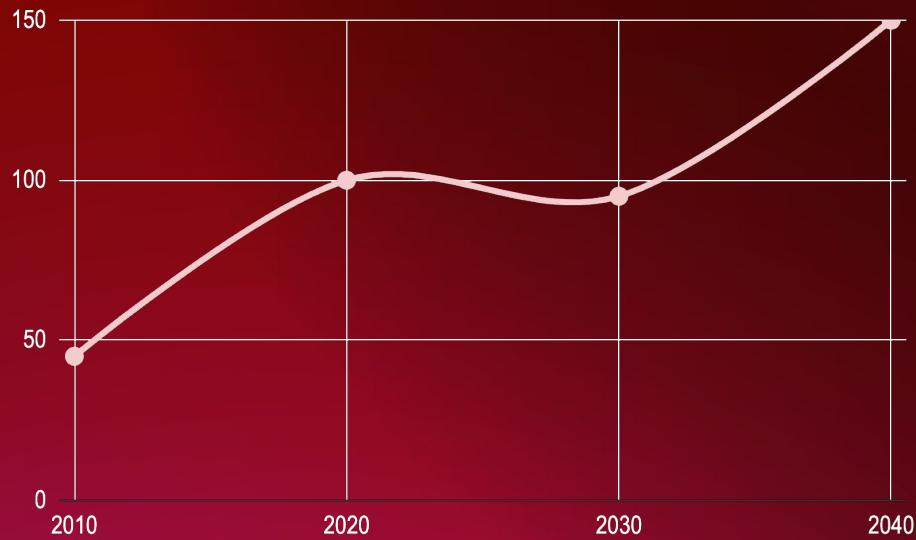
Target

Data Table

Final Question

[Back](#)

THIS IS A GRAPH!



To modify this graph, click on it, follow the link, change the data and paste the resulting graph here, replacing this one



INFOGRAPHICS MAKE YOUR IDEA UNDERSTANDABLE...



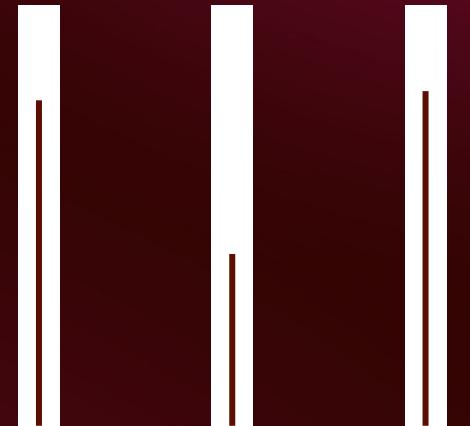
56%

Despite being red,
Mars is cold



30%

Mercury is the
smallest planet





Back



...AND THE SAME GOES FOR TABLES

	Mass	Diameter	Gravity
Mercury	0.96	0.38	0.38
Mars	0.11	0.53	0.38
Saturn	95.2	9.4	1.16



TRUE OR FALSE?

- Guess whether these statements are true or false
- Guess whether these statements are true or false
- Guess whether these statements are true or false

True

False

- Guess whether these statements are true or false
- Guess whether these statements are true or false
- Guess whether these statements are true or false

True

False



YOU GOT IT RIGHT!

Back



OOPS! YOU ARE WRONG...

Back



WRITE A QUESTION ABOUT PERCENTAGES



50%

30%



ARE YOU SURE? LET'S SEE!

Go!

Back

Back



HERE IS THE ANSWER!



Did you get it right?

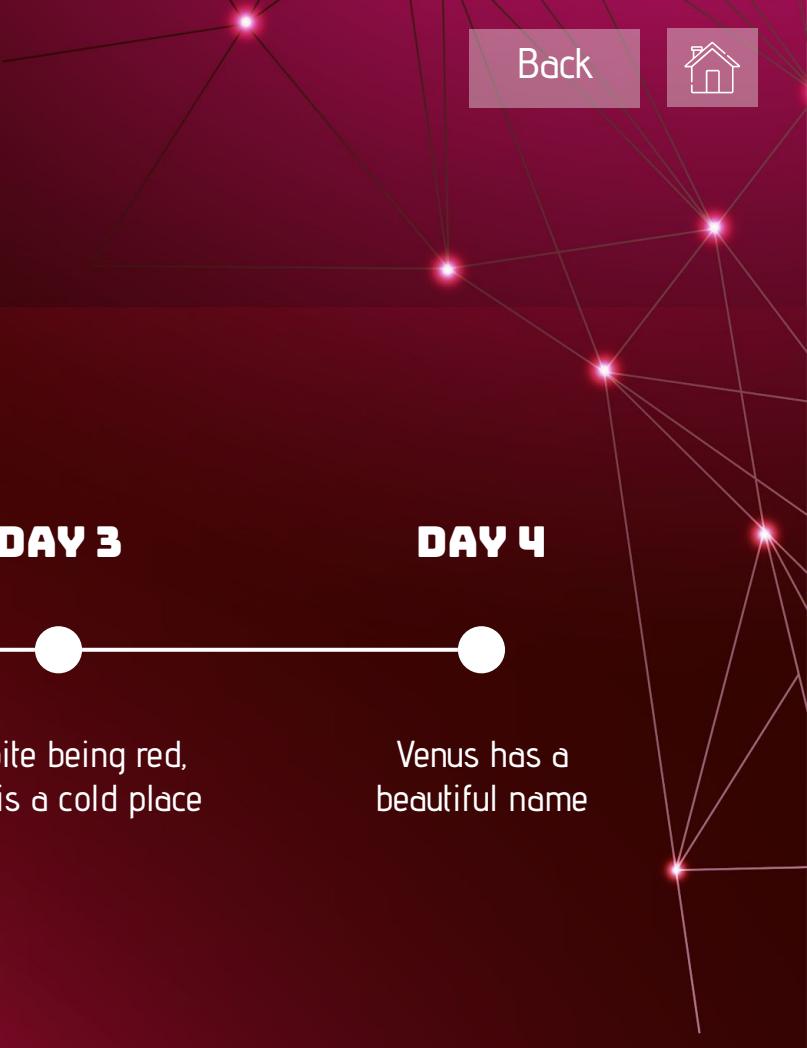
30%



HOW WILL WE ACHIEVE OUR GOALS?

Timeline

Budget



Back



TIMELINE

DAY 1



Mercury is the
smallest planet

DAY 2



Jupiter is the biggest
planet

DAY 3



Despite being red,
Mars is a cold place

DAY 4



Venus has a
beautiful name



Back



BUDGET

Total Budget

Breakdown

\$320,000

Big numbers catch your audience's attention

A faint, light-gray network graph is visible in the background, centered on a small red dot. The graph consists of numerous thin, light-gray lines connecting various points.

Back



BUDGET

Total Budget

Breakdown

33%

Saturn is composed of hydrogen and helium

45%

Neptune is the farthest planet from the Sun

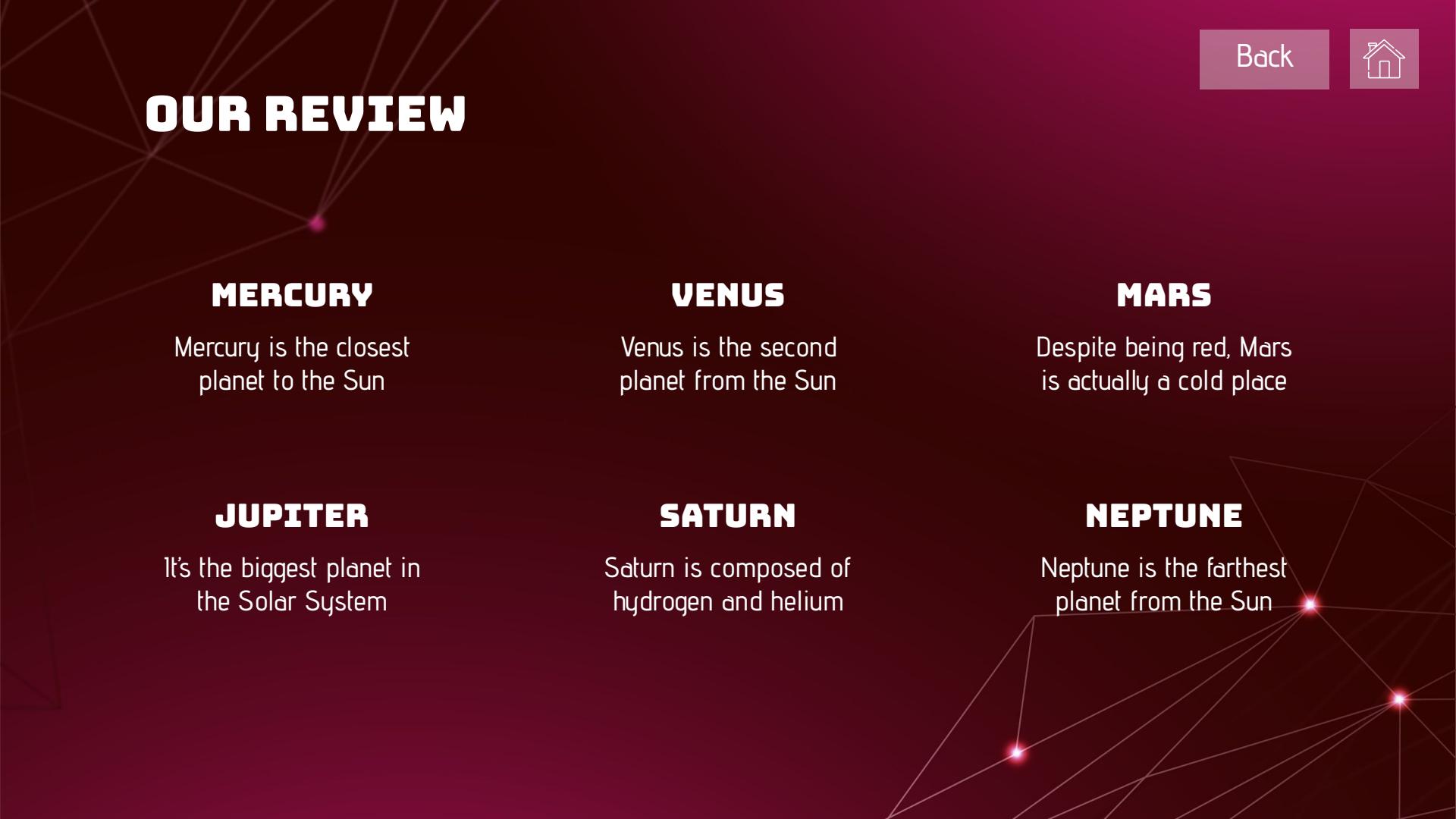
22%

Despite being red, Mars is actually a cold place



**HOW WOULD YOU SUMMARIZE THE
PROJECT IN 6 WORDS?**

Check if it matches our review



Back



OUR REVIEW

MERCURY

Mercury is the closest planet to the Sun

VENUS

Venus is the second planet from the Sun

MARS

Despite being red, Mars is actually a cold place

JUPITER

It's the biggest planet in the Solar System

SATURN

Saturn is composed of hydrogen and helium

NEPTUNE

Neptune is the farthest planet from the Sun

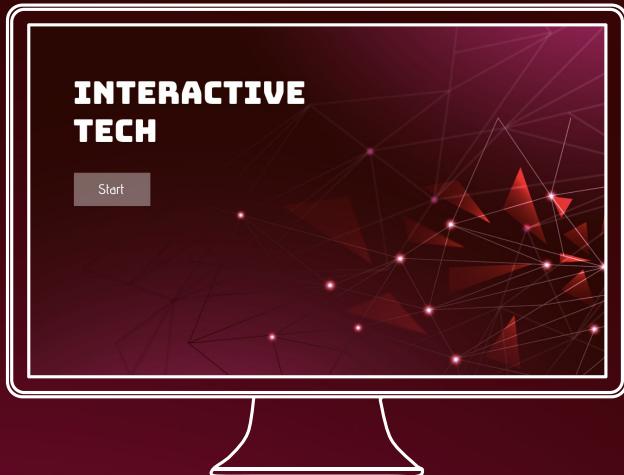


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THANKS!

Do you have any questions?

youremail@freepik.com

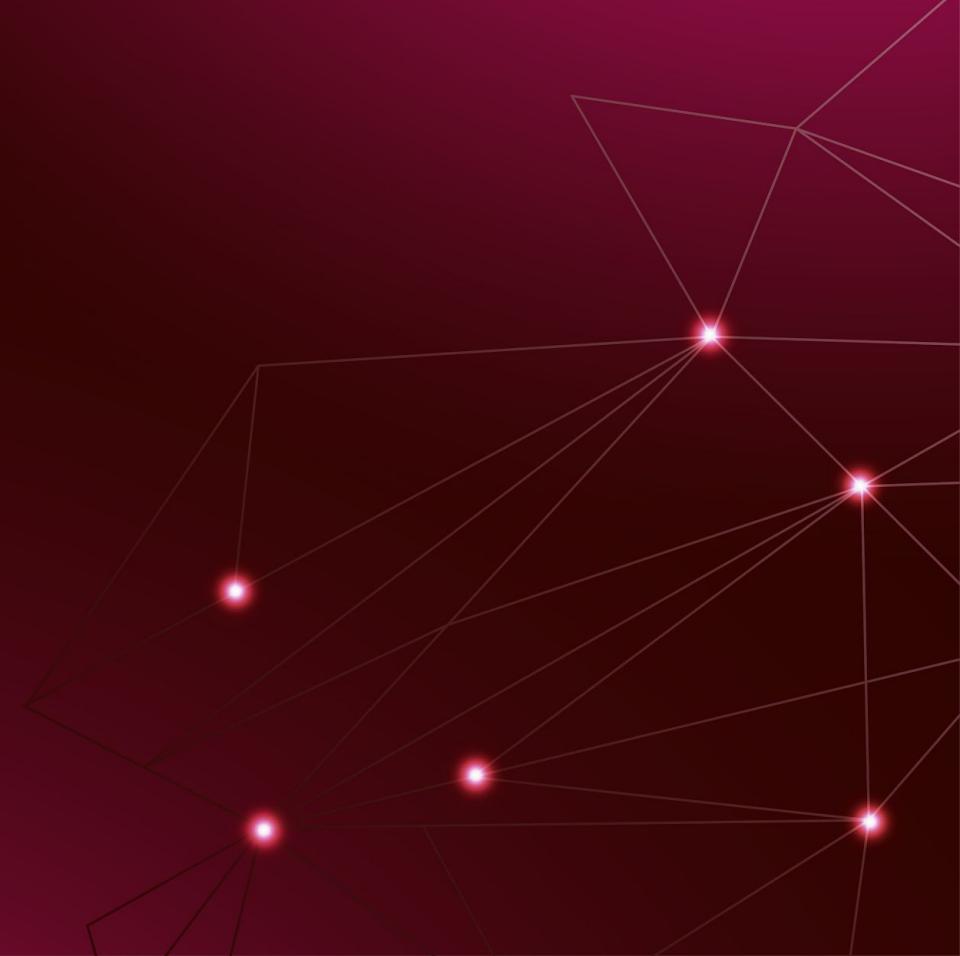
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ALTERNATIVE RESOURCES

- Technology background
- Futuristic background with connection lines
- Person showing fiber optic tester
- Electronic equipment and tools
- Abstract realistic technology particle background
- Multimeter and wires





RESOURCES

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VECTORS:

- Technology background concept

PHOTOS:

- Midsection view of a male technician assembling computer on wooden desk
- Person showing an optical fiber



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#ffffff

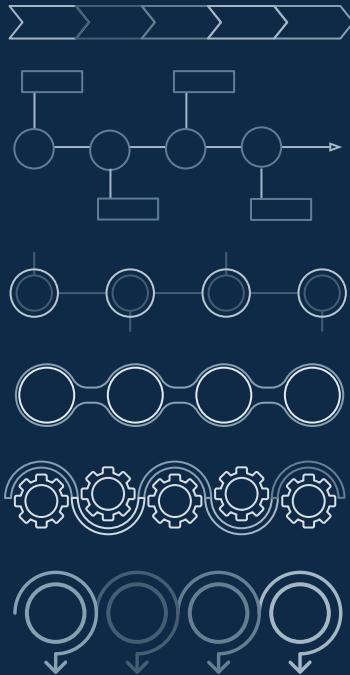
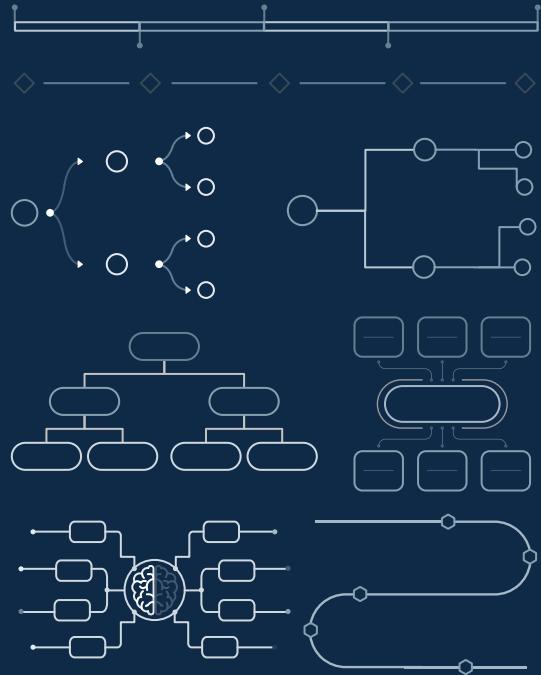
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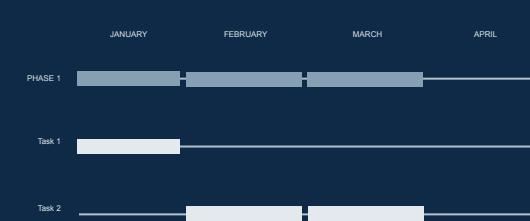
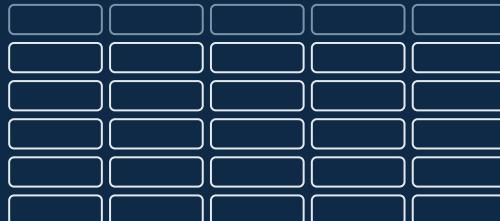
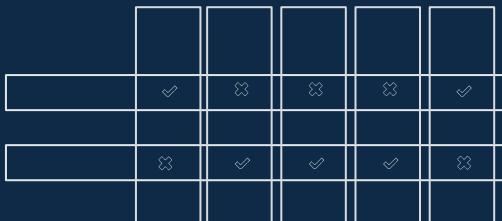
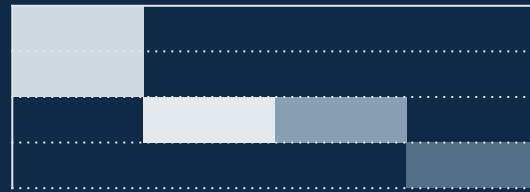
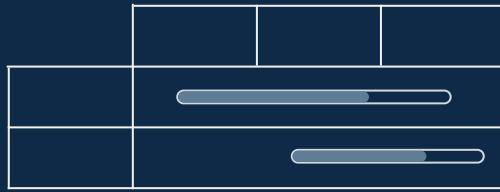
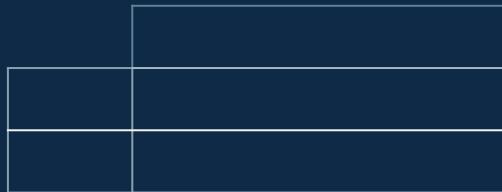
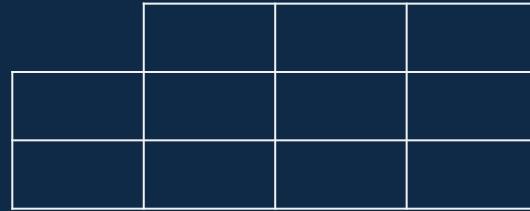
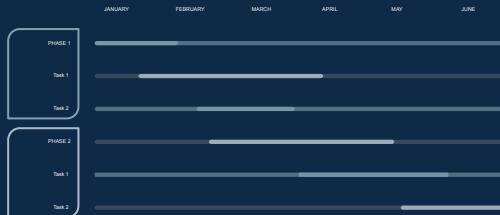
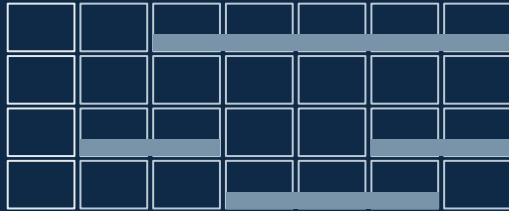
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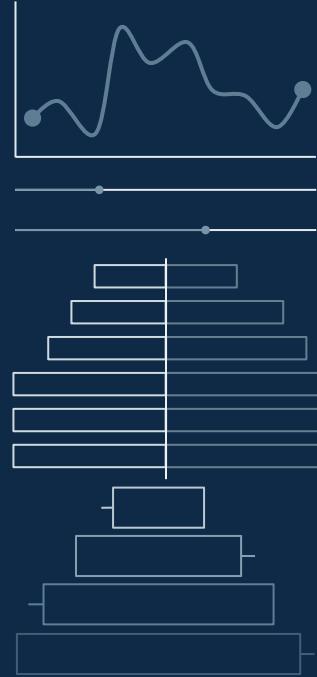
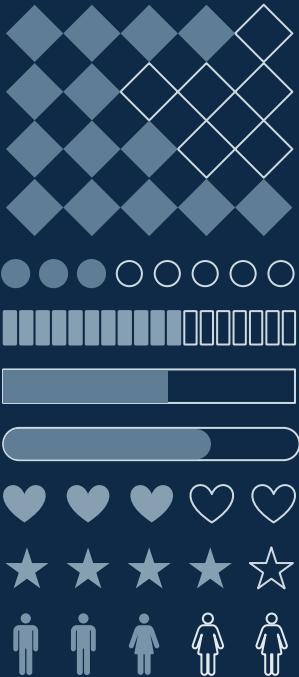
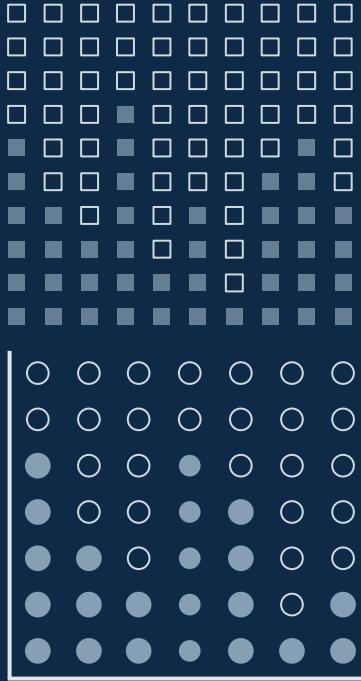












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