# EXAME DE PROFICIÊNCIA DE LEITURA EM LÍNGUA ESTRANGEIRA

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## CADERNO DE PROVA

**Idioma:**
## INGLÊS

**Área de Pesquisa:**
## (2) CIÊNCIAS EXATAS E DA TERRA, ENGENHARIAS

### LEIA ATENTAMENTE AS INSTRUÇÕES

☑ Esta prova é constituída de um texto técnico-científico em língua estrangeira, seguido de 5 (cinco) questões abertas relativas ao texto apresentado.

☑ É permitido o uso de dicionário impresso, sendo vedados trocas ou empréstimos de materiais durante a realização do Exame.

☑ As respostas deverão ser redigidas em português e transcritas para a **Folha de Respostas**, utilizando caneta esferográfica com **tinta preta** ou **azul, escrita grossa.**

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# Geniuses Wanted: NASA Challenges Coders to Speed Up Its Supercomputer
**By JACEY FORTIN** MAY 8, 2017

Are you a computer programmer with an eye for aeronautics? Get in touch with NASA. They could use your help.

To improve the performance of one of the world's biggest supercomputers, the agency is crowdsourcing some new ideas about an old coding language.

And if the prestige of NASA isn't enough of a draw, there are cash prizes to be had, totaling up to $55,000.

Here's the agency's online pitch: "NASA is looking for qualified people who can download the FUN3D code, analyze the performance bottlenecks, and identify possible modifications that might lead to reducing overall computational time." In particular, the aeronautics division is interested in improving its work in "computational fluid dynamics."

### Got all that?

Put more simply, a supercomputer called the Pleiades has a program that creates simulations of complex things like the airflow through the spinning blades of a helicopter, and NASA wants it to run more efficiently. But the program's predominant coding language, Fortran, is decades old.

Researchers sometimes have to wait days or even weeks to get an output from the Pleiades, said Michael Hetle, a NASA executive who works on aeronautics research. With better code, the computer might be able to spit things out more quickly.

"This is the first time we've had a challenge like this," Mr. Hetle added. "And so far, we have quite a bit of interest."

The contest is a cost-effective way for NASA to solve a problem, said Allen Downey, an author and computer science professor at the Franklin W. Olin College of Engineering in Massachusetts. "You can get a lot of people to effectively contribute a lot of time," he said. "And they can end up being very inexpensive for the person who runs the project."

There are two separate contests on the table. One calls for big-picture, strategic ideas to re-envision the code, with prizes up to $20,000. The other calls for tactical changes that might increase efficiency, with up to $35,000 in cash prizes on offer.

Daniel Merlino, 30, is going for both, and he's willing to put in some long hours whether or not he wins. He likes a challenge, he said.

Last week, Mr. Merlino, a computer science student at the University of North Texas, came across a BBC News story about the NASA request. He said he doesn't know Fortran yet but has taught himself other programming languages in the past.

"It's our responsibility as students to continuously search for these types of situations," he said. "And stagnation in the technology industry doesn't really work for you, so you always have to push forward."

NASA has used crowdsourcing before. It asked members of the general public to come up with ways for astronauts to exercise in space in 2015 and do laundry in microgravity in 2010. Last year, it even held the Space Poop Challenge, which sought a mechanism for astronauts to take care of important business without shedding their spacesuits.

But this new challenge stands out, Mr. Hetle said, because it requires in-depth knowledge of programming codes and algorithms. The winning entry could revolutionize the way scientists use the Pleiades.

The supercomputer in question doesn't look that glamorous. Found inside the Ames Research Center in Mountain View, Calif., it consists of rows and rows of units that look a lot like high-tech vending machines.

But in fact, the Pleiades — named for one of the more conspicuous star clusters in the night sky, which was in turn was named for seven sisters in Greek mythology — is one of the most powerful computers on earth.

And while it does its number-crunching just fine, it could stand to go a little bit faster. That means improving FUN3D, a software program that uses the Fortran coding language first developed in the 1950s.

Though it is old, the Fortran code used by the Pleiades has gone through several versions over the decades, getting more sophisticated each time. And the Fortran language remains popular in some circles, especially among scientists, because it is uniquely suited to work with algebraic algorithms of the sort that apply to physical motion, Dr. Downey said.

Mr. Merlino, the computer science student, is more familiar with newer languages like SQL and Python. But he said this challenge would be a useful learning experience, for the applicants and for NASA itself. "Gaining other viewpoints and perspectives can be very useful for any type of programming project," he said.

Coding enthusiasts who want to try their hand at the challenge have until June 29 to apply, though they must be U.S. citizens over age 18. The winners will be announced in August.

**EM HIPÓTESE ALGUMA, SERÁ CONSIDERADA A RESPOSTA NESTE CADERNO.**

Depois de ler o texto, responda as questões a seguir em português.

QUESTÃO 01 – De acordo com o texto, o que a NASA está fazendo para melhorar a performance de um dos maiores supercomputadores do mundo?

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QUESTÃO 02 – Segundo o texto, o que é o "Pleiades"? O que ele tem e o que ele cria? O que a NASA espera com isso e qual o problema enfrentado?

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QUESTÃO 03 – De acordo com o texto, a NASA está buscando quais tipos de pessoas e o que elas devem conseguir fazer? Qual observação é feita com relação à divisão aeronáutica?

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QUESTÃO 04 – De acordo com o texto, quais foram as observações feitas por um estudante de ciência da computação de uma universidade localizada no sul dos Estados Unidos?

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QUESTÃO 05 - Segundo o texto, embora apresente alguns problemas, por que o programa de codificação Fortran ainda permanece popular?

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