

# Re: Question about the P vs NP problem

---

*Source:* <http://sci.tech-archive.net/Archive/sci.math/2007-12/msg01713.html>

---

- *From:* "christian.bau" <[christian.bau@xxxxxxxxxxxxxxxxxxxxx](mailto:christian.bau@xxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Sat, 8 Dec 2007 17:13:32 -0800 (PST)
- 

On Dec 7, 5:58 pm, H <[h\\_boutam...@xxxxxxxxxxxxx](mailto:h_boutam...@xxxxxxxxxxxxx)> wrote:

On the official web page of the ClayMath institute, that describes the problem [http://www.claymath.org/millennium/P\\_vs\\_NP/](http://www.claymath.org/millennium/P_vs_NP/).

We have the problem of "organizing a housing accommodations for a group of ..." .

My question is how to call this NP problem and is it complete ?

Thanks in advance.

If I understand this correctly, then the problem is as follows:

Given is a number  $N$ , and a set of  $N$  students (here:  $N = 400$ ).

Given is a number  $k$  (here:  $k = 100$ ).

Given is a set  $P$  of pairs of students.

Find a set  $S$  of  $k$  students, such that for any two elements  $x$  and  $y$  of  $S$ ,  $(x, y)$  is not an element of  $P$ .

Now consider the graph  $G$ , defined by  $(x, y)$  element of  $G$  iff  $(x, y)$  is not an element of  $P$ .

The problem is now: Find a set  $S$  of  $k$  students such that for any two elements  $x$  and  $y$  of  $S$ ,  $(x, y)$  is an element of  $G$ .

This is known as the "maximum clique" problem and known to be NP complete.

The problem as posed seems to be the "maximum independent set" problem; obviously also NP complete.

.