Re: Exists an ordinal set{1,2,3,... }which has 2^xo elements : Demonstration:

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From: David P. Ferguson (*david.ferguson1_at_cox.net*)
Date: 07/31/04

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Andre Caldas <andre@lugar_nenhum.invalid> wrote in message news:<40f68cf0$1@post.usenet.com>...
> ***** Post for FREE via your newsreader at post.usenet.com *****
>
> *Hello, David!*
>
> *David P. Ferguson wrote:*
> > *I recently submitted a post "My list" in which I claimed to have*
> > *provided a*
> > *list of the subsets Of N.*
>
> *I think I saw your post somewhere. You had a "computational" proof of*
> *what you are claiming, right?*
>
> *There is a difference between saying a set is "countable" and saying you*
> *can make a "list of it's elements". I think you are just "well−ordering"*
> *the subsets of N. That would be the "well−ordering principle" − which is*
> *equivalent to the axiom of choice.*
>
> *Would you tell me what you mean by "list"?*
>

A list is something of the form:
A = {a1, a2, a3, a4, ...} if every element of B is an element of A
then B is listable.
If there is no A = {a1, a2, a3, ...} such that B sub A then B is
unlistable.

The set N x N is listable since
A = {(1, 1), (2, 1), (2, 2), ...} contains every element of N x N.

This is clear since there are only 1 + 3 + 5 + 7 + ... elts in N x N.

P(N) is listable since : My list:
ML = [{0}, {0, 1}, {0, 2}, {0, 1, 2}, {0, 3}, {0, 1, 3}, {0, 2, 3},
...] contains every subset of N.

"This is clear since there are only 1 +2 +4 +8 +16 +... subsets of N."

There is ESSENTIALLY no difference in dificulty in providing a list of the subsets of N as in providing a list of the elements of N x N.

If N has Infinite subsets then there are infinite serialization numbers which give the location of those subsets in the list.

I know that the subset O of N = {1, 3, 5, ...}.has twice as many successors in the list as it has predecessors and

I know that the subset E of N has twice as many predecessors as successors in the list.

Certainly Cantor should have observed :
|N x N| = [1 + 3 + 5 + 7 + ...] = Xo^2 and AVG(1, 3, 5, ...} = Xo!
Compare: |P(N)| = [1 + 2 + 4 + 8 + ...] = 2^Xo −1
And |N| = [1 + 1 + 1 + 1 + ...] = Xo
Is L1 = 1, 3, 5, 7, ... a list?
Is L2 = 1, 2, 4, 8, ... a list?
Is L3 = 1, 2, 3, 4, ... a list?

A Cantorian would be lost here. A cantorian would conclude, mistakenly, That l1 and L2 are sublists of list L3. A cantorian might, mistakenly, note that "1, 3, 5, ... is a proper subset of 1, 2, 3, 4, ... and therefore:
Sum(L1) < Sum(L3).
But Card(N x N) = Xo^2 and Sum(N) = (Xo^2 + Xo)/2 so
Sum(L1) > not < Sum(L3). Since: Xo^2 > (Xo^2)/2 + Xo/2
I keep making typos and getting diverted. I had better retire now and tackle work later.

Cantor clearly stated that no list of subsets of N could possibly contain every subset of N. But if there is a NATURAL list of the subsets of N−−−−!

But I say that the claim that N is "listable" negates any claim that the set of subsets of N is "unlistable".

The number of elements in N x N is Xo times Xo yet Cantor claims that there is a one to one corrspondence between N and N x N.
For every element of N there are Xo elements of N x N. Yet cantor makes the insane claim that FOR SOME N, N has as many elements as N x N.

The correspondence: (N x N) Xo<=>1 (N) is ignored by Cantor. The arrogance of the man!

Cantor correctly observes that the elements of N x N can be "simply ordered", and that that means that there is as "list" of the elements of N x N.

Where he got the insane idea that the sets N and N x N are
equinumerous I don't know.
The elements of N x N are listable because there are only 1 +3 +5 +7
... elts

It doesn't matter to Cantor that the average of the summands:1 +3 +5
+.. is Xo.

What it boils down to is: N x N is enumerable given that N is
enumerable.
Similarly, Given that N is enumerable, we know that the subsets of N
are enumerable.

This is clear since there are only 1 +2 +4 +8 +16 +...subsets of N.
Now: if cantor was even a halfway competent mathematician he would
have been able to deduce, from the evidence above, that N x N and P(N)
are either both enumerable or both non−enumerable; and that neither
could only be placed into one to one correspondence with N.

Anyway when I talk about listing the subsets of the set of natural
numbers or when I say there is a list of the natural numbers. I mean
that The set lists itself. I know that every subset has it's natural
place in the list so that I can be assured that all of the elements of
the set have a place in the list.

If there is a non−enumerable set it would have to be a set which
cannot be simply ordered. (seems to me, I admit) Ordering implies
enumerable list. List implies greater enumerable list.

\>
> > *I intended that to imply that there is a set {1,2,3,...} which has the*
> > *same cardinality as the set of subsets of N.*
>
> *a set {1,2,3,...} −−> do you mean a subset of N?*
>
>
> >
> > *Everyone kept turning this into a mapping of subsets of N to binary*
> > *0.d1,d2,d3,d4,...*
> > *1+2+4+6+...=>0.11111* (I think that is what they said)*
>
> *I think they are doing this, because you can injectively map the reals*
> *between 0 and 1 into Power(N).*
> *Thus card(R) = card([0,1]) <= card Power(N)*
>
> *And what the cantor diagonal proves is that Card(N) < Card(R). So you*
> *have: Card(N) < card Power(N).*
>
> *[As far as I remember what I read from your other post, you had made a*
> *diagonal of subsets of N... this does not work, because {1, 2} = {2, 1}.*

> Sorry, I don't have a copy of this post of you − I just joined this list.]
>
> > Lets say that {Ind(A): A elt off Power set of N} = Big
> >
> > Am I mistakesn or does everyone keep attempting to say that
> > Card(Big) = Card (N) thus implying that Big 1−1 N:
>
> I guess they are trying to derive a contradiction from your arguments.
>
>
> > I do not intend that. I believe that Card (Big) is > Card(Xo)
> > And that there are ordinal numbers > Xo.
>
> Is Xo = Card(N)? If so, how come you think Card(Big) > Card(Xo), but at
> the same time you claim there is a "list" of subsets of N? (what do you
> mean by "list"?)
>
>
> > Anyway to go arround the fence:
> > Suppose we are given a number line with unit intervals
> > [1,1],[1,2],[2,30,...
> >
> > The resulting point set is supposed to have cardinality Xo
> >
> > Point set Nl = [1,2,3,4,...]
> > Divide each interval [n−1,n] into 2^n−1 subintervals:
> > Name that set of arithmetic locations '2^N"
> >
> > d2^ = [0.0, 1.0,| 1.5, 2.0,| 2.25, 2.50, 2.75, 3.0,| 3.125, 3.25,
> > 3.375, 3.5, ...
> > Big = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
> > 11..]
> >
> > Card(Big) = [1+2+4+8+16+32+64+...|Xo terms]2^Xo so it has 2^Xo
> > elements. SO:
> >
> > If I'm not mistaken this set has as many elements as the set of
> > subsets of N.
>
> What set? The set d2^?
> Why do you belive it has "as many elements" as Power(N)?
>
>
> >
> > According to the mathematicians who follow after Cantor; such a linear
> > set is impossible.
> >
> > Related to this is the Cantorians claiming that there are as many
> > elements in
> > N as there are in N x N. They claimed that merely being able to list
> > the elements of N x N proved that N and N x N have the same number of

> > elements.
> > Actually being able to list the the elements of N x N is only part of
> > the Cantorians task.
> >
> > The Cantorians must demonstrate that the elements in their list can be
> > placed 1−1 with elements of N.
>
> If you follow this list, you will see that you have ONE and ONLY ONE
> natural for each element on the list. Thus, you have your 1−1
> correspondence:
>

Yes but the list of "index numbers" (that is what you are really
talking about isn't it?) has Xo x Xo elements . The list of INDEX
numbers is LONGER than the list of NATURAL numbers.

> 1 These The
> 2 3 Are set of
> 4 5 7 Index natural
> 6 8 10 Numbers numbers is
> 9 11 13 16 Not a proper subset
> 12 14 17 20 24 Natural of these
> 15 18 21 25 .... Numbers Index numbers
Cantor never understood this: But we can.
The set of points on the number line 0, 1, 2, 3, ... is taken to be
the set of natural numbers. each of these numbers has an ordinal
position in a list of these numbers.
Ind(0) = 0
Ind(1) = 1
...
Ind(n) = N Old index nrs:1 2 3 4
If we augment the set of points:0.0, 0.5, 1.0, 1.5, 2,0, 2.5, 3.0
....
We have index nrs:1 2 3 4 5 6 7
More points means more index numbers! Not more natural numbers.
>
>
> > There are N unit intervals long the X axis. These unit intervals
> [...]
>
> > Xo times Xo subrooms and an ordinal set with Xo^2 elements if we asign
> > a positive ordinal to each person in the hotel.
> > If we wanted to, we could figure out what the index munber of person
> > from room (r0w, collumn) = (r,c) If the method of listing the unit
> > squares is
> > List squares with Max(r, c) = n
> > and for each n start with (c,1)
> > (1,1)
> > (2,1),(2,2),(1,2)
> > (3,1),(3,2),(3,3),(2,3),(1,3)
> > etc..

>
> *The important thing is that for each natural number (room?), you have*
> *ONE unique pair (m, n).*
>
>
> *Andre Caldas.*
>
>