Computers for a sustainable future

मिलिंद दिवाण

२३/२/२०१८

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मेरे बारे मे

- हायस्कूल - सिटि हायस्कूल, सांगली, महाराष्ट्र

- १९७८ मे अमरिका गये

- अब ब्रुकहेवन नैशनल लॅबमे २० साल शास्त्रज्ञ

What is a computer ?

Input data into memory

Instructions in memory

calculating engine

output to a memory

Abacus is a computer. Electronic computers are abacuses with billions of beads.

Examples of computers

- Calculator
- Mobile
- Desktop
- Raspberry PI

Raspberry Pi

- ***www.raspberrypi.org for more information.***
- ***You can purchase it from amazon.in***
- ***The raspberry-pi is a small simple computer with many features.***
- ***We will demonstrate it today.***
- ***Supported by a large global community that is interested in making computing easy and fun.***



Cost is ~ ₹ 2500/each
with cables and microSD cost
goes to ~ ₹ 3500/each

This presentation is on raspberry Pi !

Let’s start a game.

Who wants to play ?

When you come up please say your name, school name, and class.

Write a computer program ?

- Let's make a picture of some circles. Type in

c1 = Circle[{0,0},2];
Graphics[c1,ImageSize->Large]

- Make a row of circles

crow = Table[Circle[{i,0},1],{i,1,5}];
Graphics[crow,ImageSize -> Medium]

- Table of circles

ctab = Table[Circle[{i,j},1],{i,1,5},{j,1,5}];
Graphics[ctab,ImageSize -> Medium]

Do some math ?

- **What is the solution to x= x^2 ?**

  pl1= Plot[x,{x,-3,3}]

  pl2= Plot[x^2,{x,-3,3}]

  Show[pl1,pl2]

$$x+1=x^2$$

$$\frac{x+1}{x}=x$$

$$x=1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\ldots}}}}}$$

- **What about x+1 = x^2 ? Can you do the same ?**

- **Do you know what the golden ratio is ?**

$$x=\frac{1+\sqrt{5}}{2}$$

What do you need to do great science ?

- Mathematics
- Language
- Curiosity: find what is true……
- सच क्या है ? यही तो हम समझना चाहते है ।

How can we use this simple computer ? Let’s write some examples.

- Many examples came from the audience.
- Agriculture, security, automatic sensors, wildlife photography, etc.
- Most interesting question: how to enhance the education of the underprivileged or illiterate.