Assessing the use of SBCs as a Teaching Tool

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Pre- and Post-Survey Questions

1. How confident are you that you can describe how to decompose a problem using multiple threads and implement it using a parallel loop?

2. How confident are you that you could describe the advantages and disadvantages of using parallel programming on shared memory multicore machines to someone familiar with programming?

3. How confident are you that you can define speedup and describe it to someone familiar with programming?

4. How confident are you that you can describe what a race condition is and how to avoid it when writing parallel programs that use shared memory?

5. *Post-survey only.* To what extent did using an inexpensive multicore computer (e.g. the Raspberry Pi) to run parallel programs motivate you to learn more about parallel computing in the future?
Q1: Confidence in describing...

Q1: ... how to decompose a problem using multiple threads ... 

Pre: n = 49, $\bar{x} = 2.22$; Post: n = 48, $\bar{x} = 3.83$; $p = 1.41e-11$
Q2: Confidence in describing ...

Q2: ... advantages & disadvantages of using parallel programming ...

Pre: $n = 49$, $\bar{x} = 2.71$; Post: $n = 48$, $\bar{x} = 4.08$; $p = 2.85e-9$
Q3: Confidence that you can ...

Pre: $n = 49, \bar{x} = 2.45$; Post: $n = 47, \bar{x} = 4.19; p = 3.71e-10
Q4: Confidence that you can ... 

Pre: $n = 49, \bar{x} = 2.59$; Post: $n = 47, \bar{x} = 4.06$; $p = 4.95e-8$
Q5: To what extent did using ...

Q5: ... Raspberry Pi ... motivate you to learn more ...

Post-Survey

Post: $n = 48$, $\bar{x} = 4.19$
Open-Ended Comments

• I love microcontrollers, but this is my first time using a Raspberry Pi... I'm more motivated to use a Raspberry Pi...

• I enjoyed programming on the Pi and have gained more of an enthusiasm with it.

• It's fun to see it work on a small machine and get to play with the tech I keep hearing about (raspberry pi).

• Not having to have an expensive computer to try this stuff on is really motivating.

• Awesome seeing how easy this was to teach.
Open-Ended Comments

• *I learned more about the type of devices that are capable of parallel programs. I would like to look at parallel computing on a super computer.*

• *I think it is great for education.*

• *I always thought that you need expensive HPC to do parallel programs.*

• *I have been interested to learn about this for a long time but never knew where to begin.*

• *I'll probably try to get my own Raspberry Pi to practice more and write my own code for it.*
computing
Pi
workshop
Raspberry
four
programming
parallel
simple
great
awesome
programs
think
loves
using
time
enjoyed
since
really
learn
computer
HPC
machine
work
make
expensive
class
try
get
interested
Calvin
Maclester College
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