Teaching High Productivity and High Performance in an Introductory Parallel Programming Course

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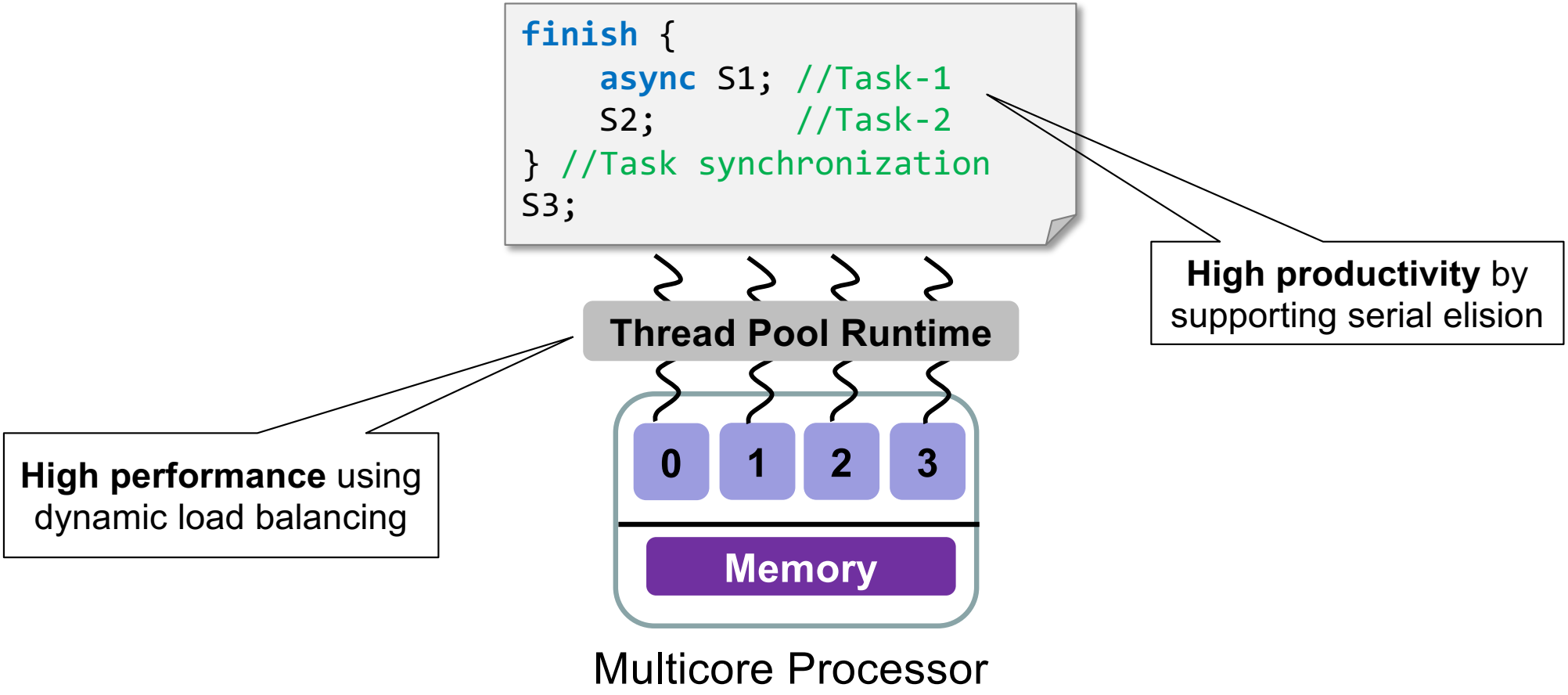
(https://vivkumar.github.io/)

Tasks Based Parallel Programming Model

```
finish {
    async S1; //Task-1
    S2;       //Task-2
} //Task synchronization
S3;
```



Existing courses on parallel computing using task parallelism focus on productivity or performance, but not both

Contributions

Foundations of **P**arallel **P**rogramming course (FPP)

Covers a breadth of topics in parallel programming using task parallelism

Being offered at IIIT Delhi for the past five years

Emphasizes both productivity and performance

Teaches runtime techniques for improving performance in task parallelism

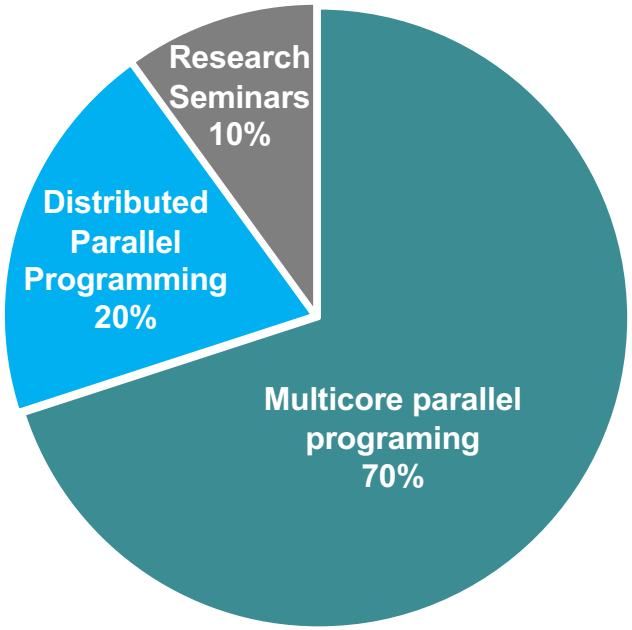
Programming intensive course evaluation

That uses a novel approach of chaining assignments and project

Detailed analysis of past five offerings of FPP

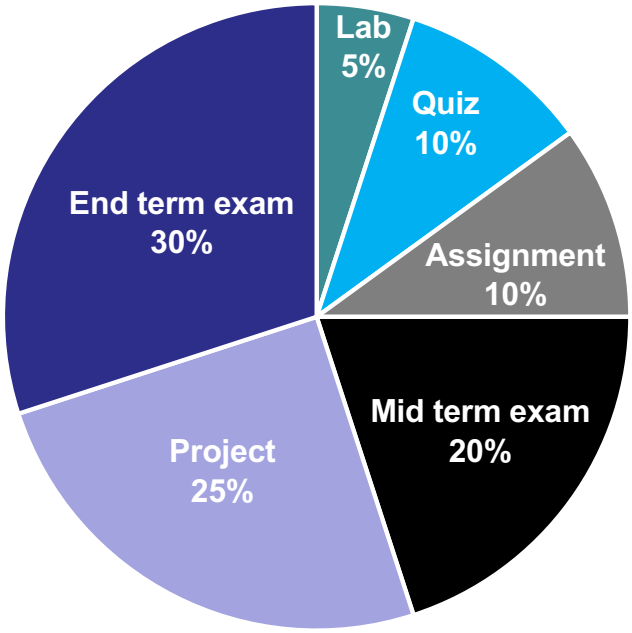
Demonstrating student distribution, marks distribution, and student feedback

Teaching Methodology



Lecture topics

Builds on COMP 322 course from Rice University [1]

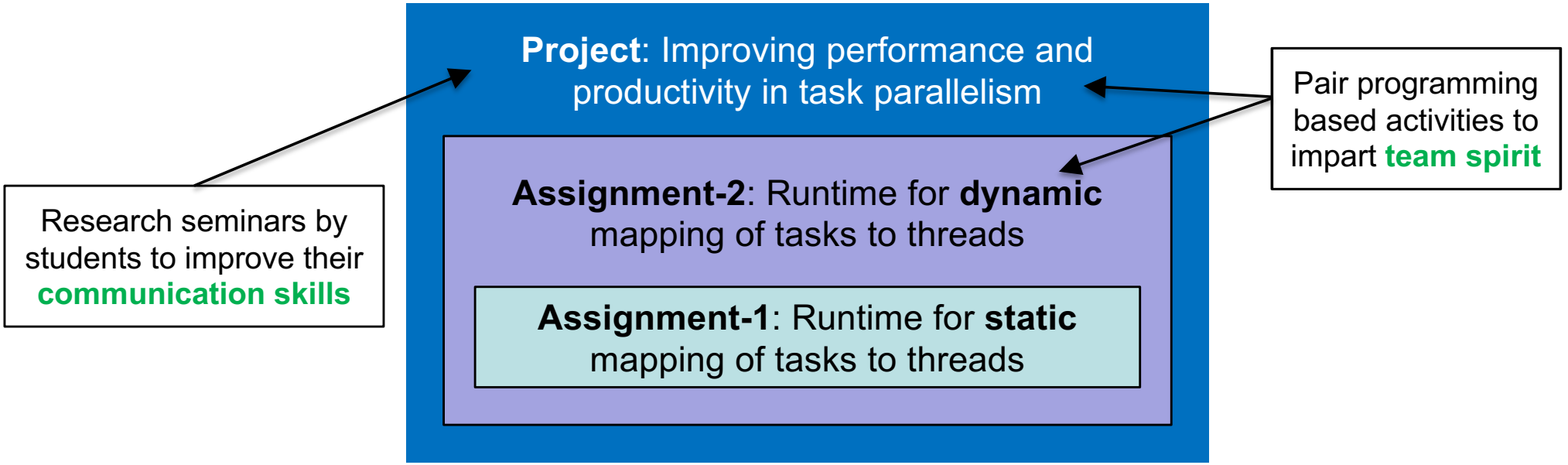


Course evaluation components

FPP uses the HClib library [2] as a teaching tool

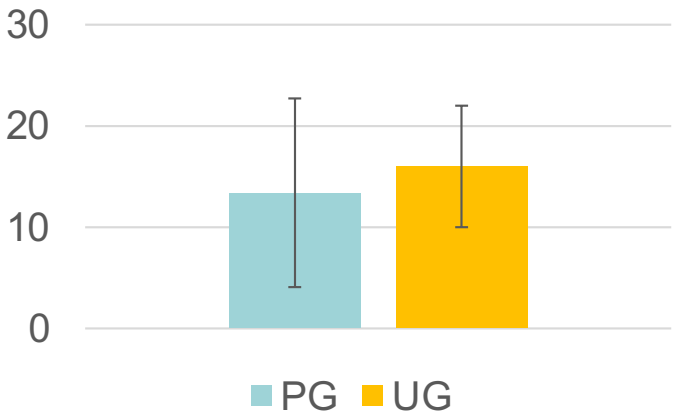
[1] https://wiki.rice.edu/confluence/display/PARPROG/COMP322
[2] https://github.com/habanero-rice/hclib

Chaining of Programming Components

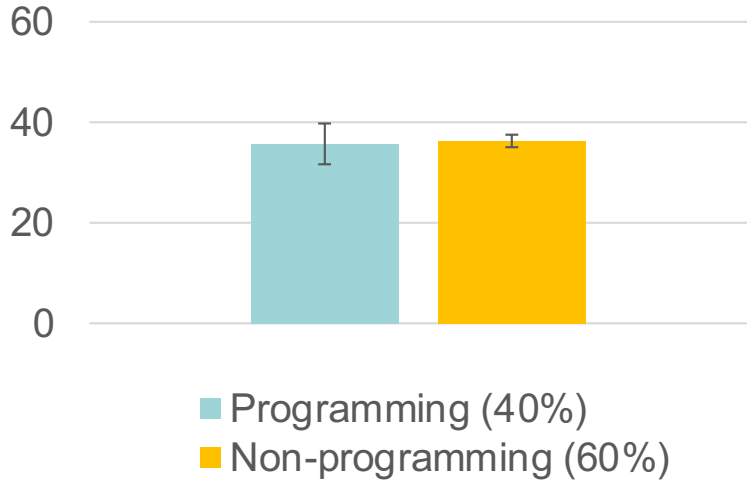


Programming heavy components to improve the C/C++ **programming skills** of the student

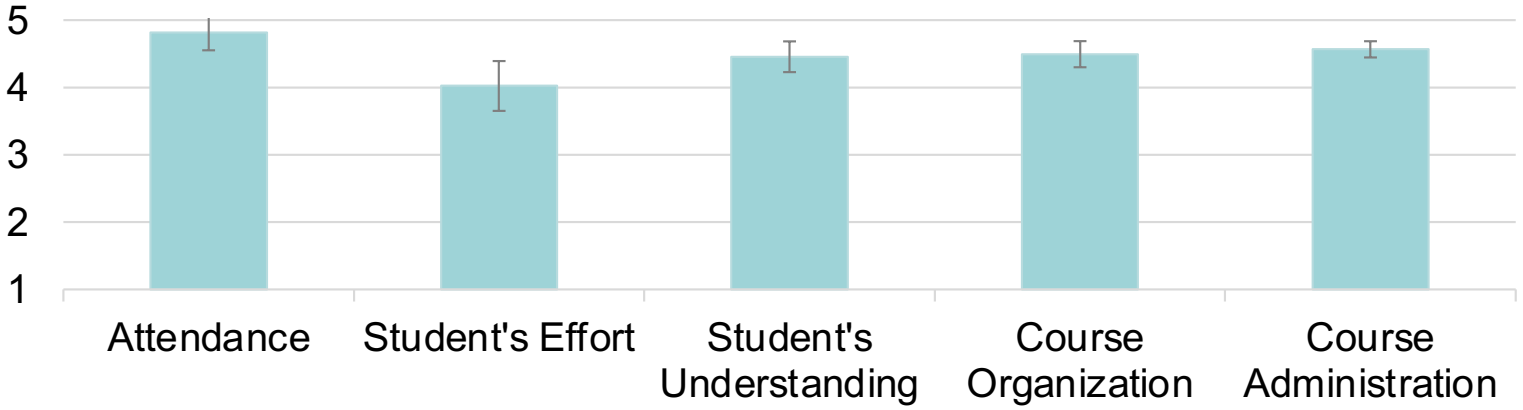
Retrospective Over Five Years



Student Distribution



Marks Distribution



Student Feedback on a Scale of 1-5 (higher the better)

Summary

- Foundations of Parallel Programming Course
  - Uses task based parallel programming model
  - Focus on both productivity and performance
  - Uses chaining of assignments and projects
  - Being offered at IIIT Delhi for the past five years

Course Webpage: https://hipec.github.io/courses/fpp.html