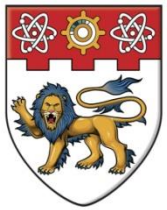

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Embedded Operating System Phase 2 (EDF+SRP in ucos)

presented by

Toshniwal Priya and Sethupandi Abishek
Student
School of Computer Science and Engineering

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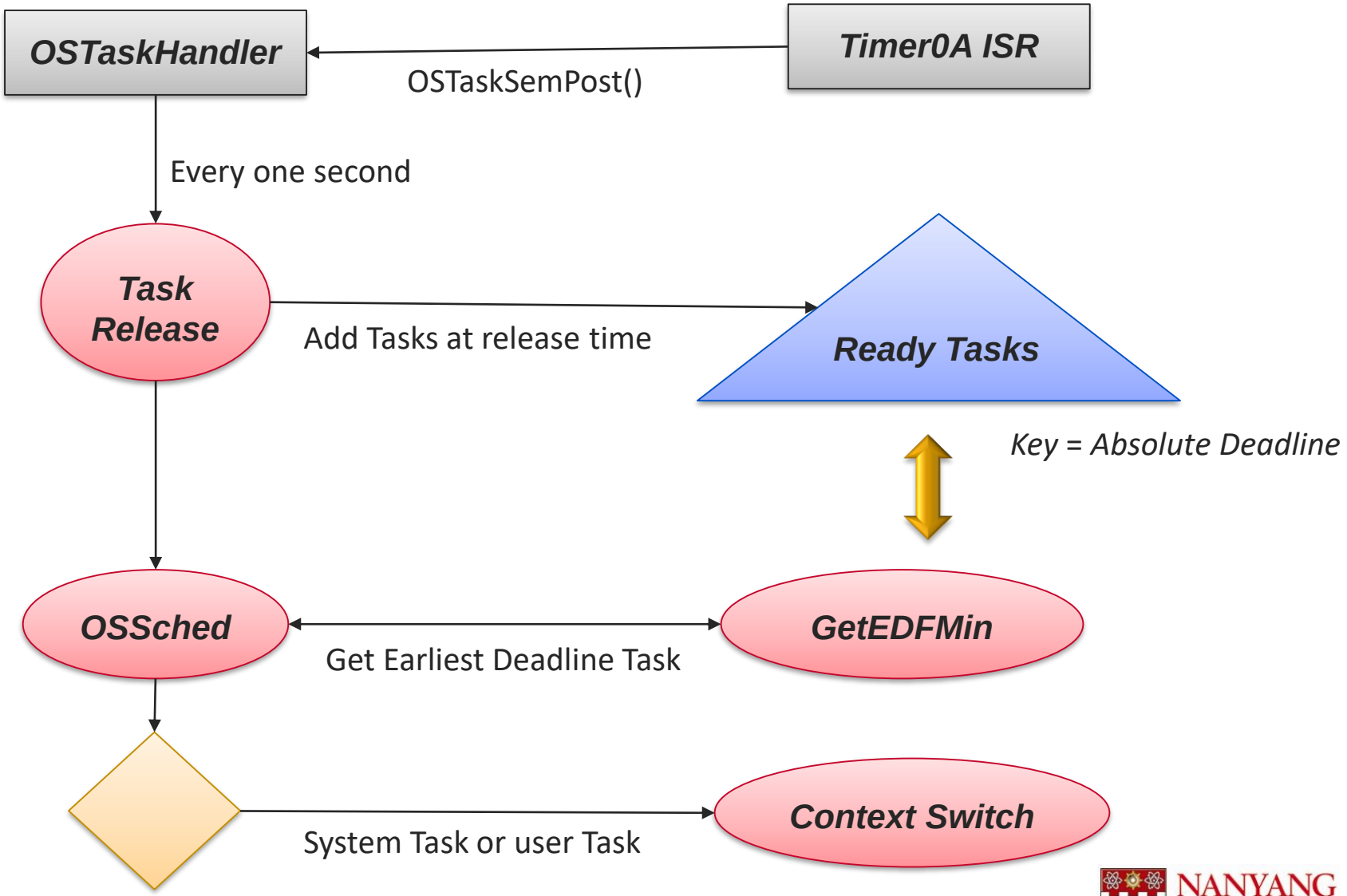
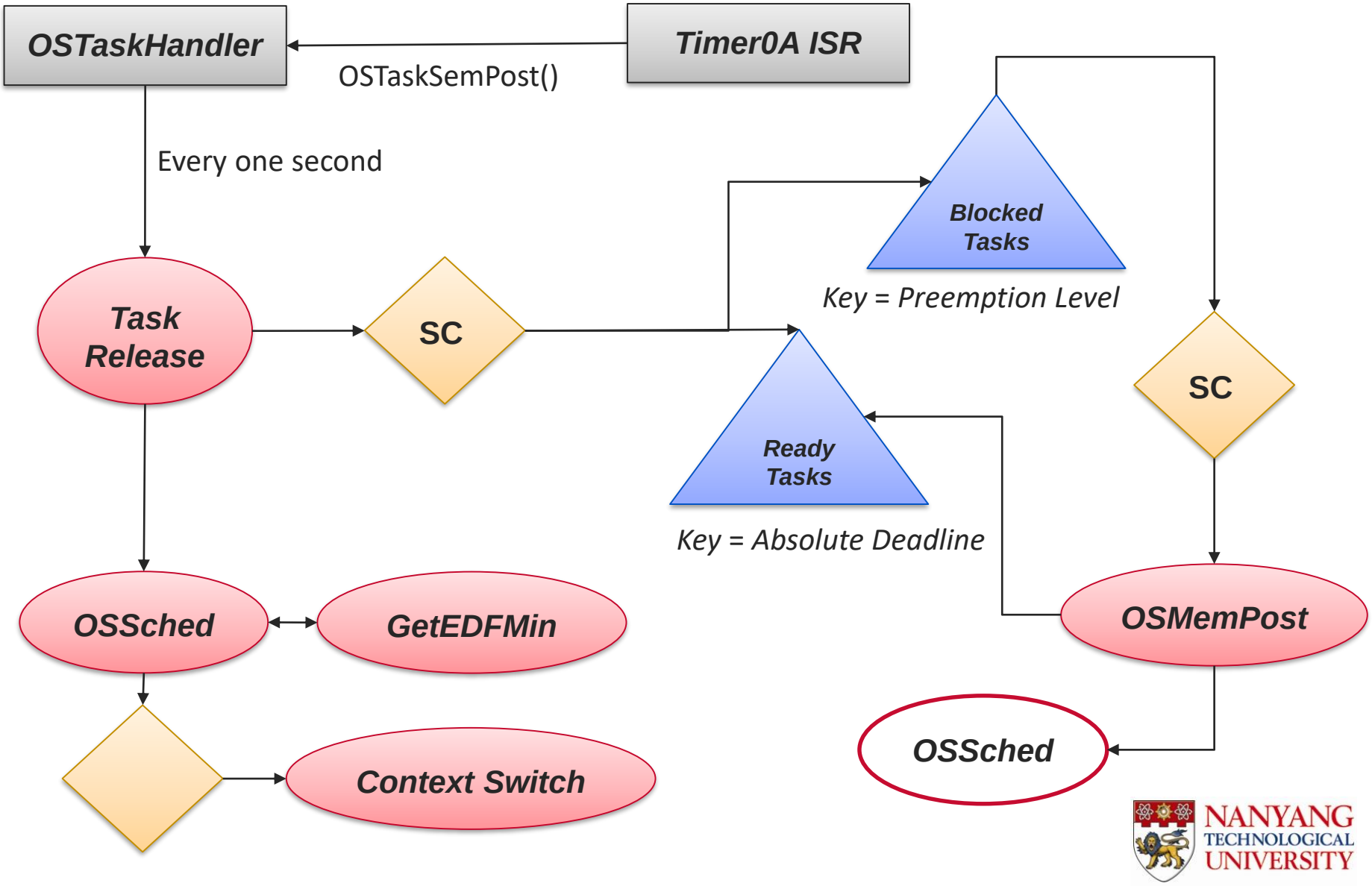
Requirements

- Phase 1
  - EDF using Binomial heap
  - Initialize Tick-Counter, after all task release
  - Hardware TIMER0A-ISR posts OSTaskHandler task to update Tick-Counter.
- Functional Requirements
  - SRP protocol using OS_MUTEX .
  - Well Nested and Non-Well Nested resources release
  - Benchmarking
  - Test case : Example

EDF Scheduler



EDF + SRP



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Example Test case

T1(13, 4, 13) – M2

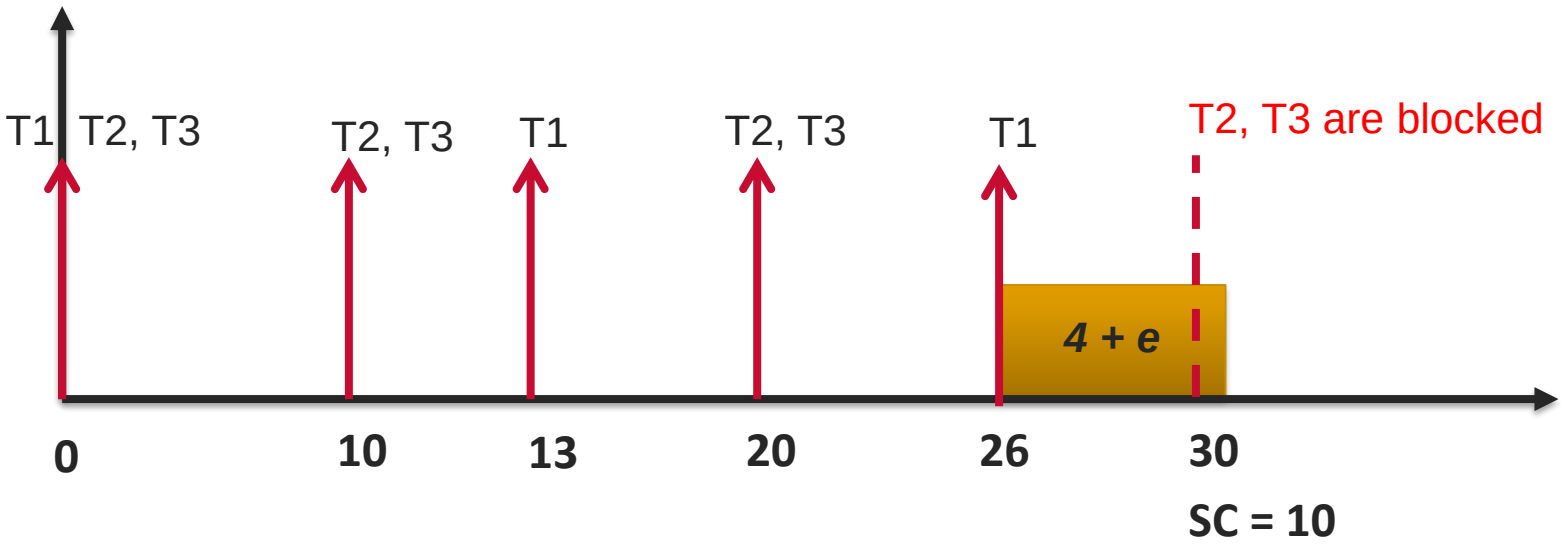
T2(10, 2, 10) – M2, M3

T3(10, 1, 10) – M3

RC: M1 = MAX_SYSTEM_CEILING

RC: M2 = max(T1 , T2)

RC: M3 = max(T2, T3)



Example Test case

T1(10, 2, 10) – M2

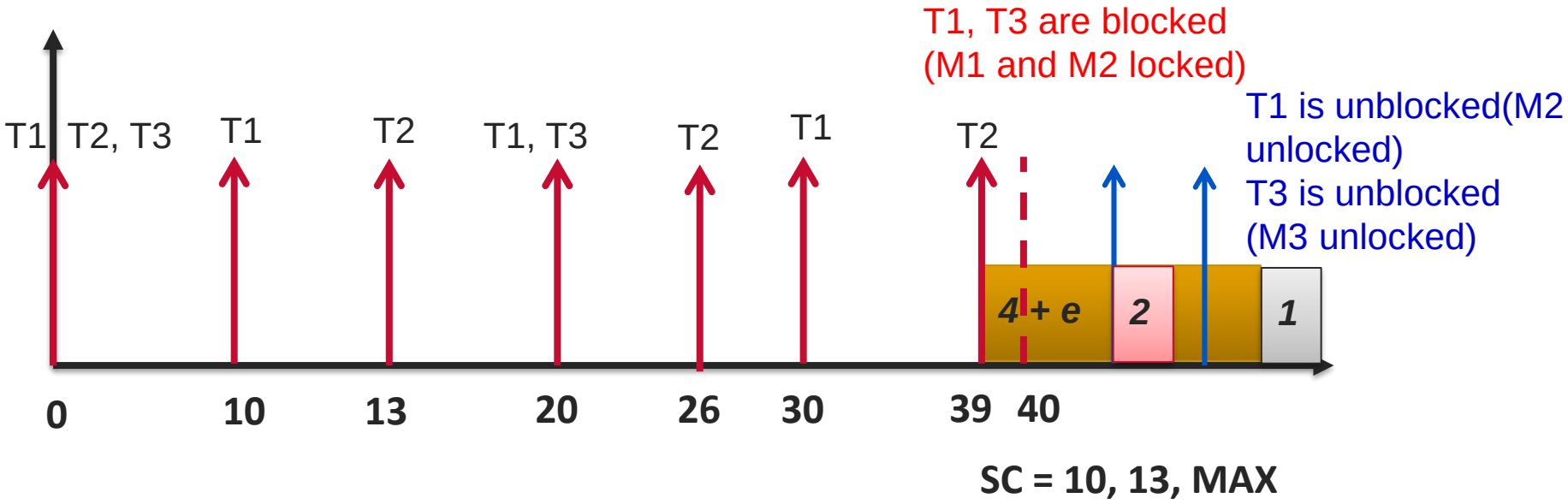
T2(13, 4, 13) – M2, M3

T3(20, 1, 20) – M3

RC: M1 = MAX_SYSTEM_CEILING

RC: M2 = max(T1, T2) - 10

RC: M3 = max(T2, T3) - 13



SC = 10, 13, MAX

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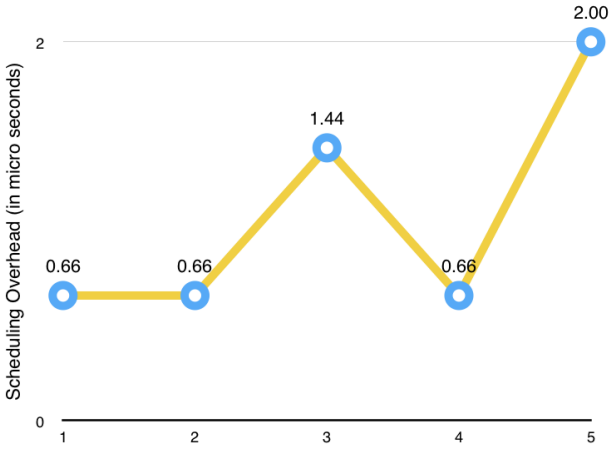
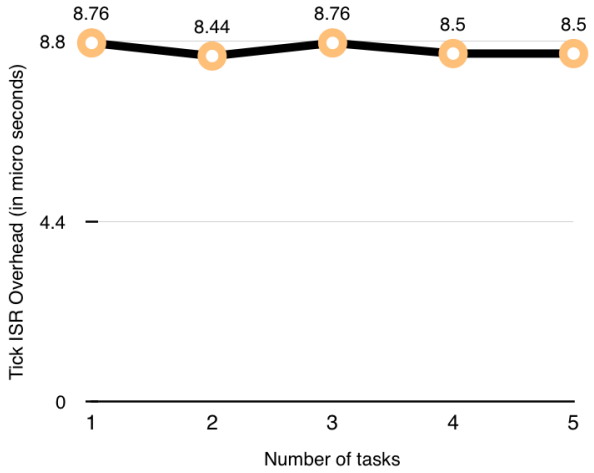
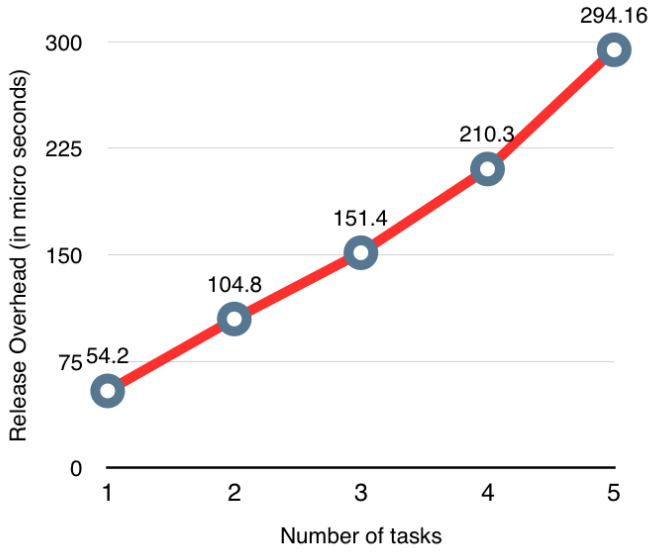
Overhead Calculation







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SRP – PIP Comparison

T1(13, 4, 13) – M2

T2(10, 2, 8) – M2, M3

T3(8, 1, 8) – M3

RC: M1 = MAX_SYSTEM_CEILING

RC: M2 = max(T1, T2) - 10

RC: M3 = max(T2, T3) - 8

Number of context switches		
	PIP	SRP
TASK 1	4716	4708
TASK 2	2056	2056
TASK 3	1038	1030