**Exercice 1** : Ordonnancement sans E/S

1 - L’exécution´ des processus dans le cadre de chacun des politiques d’ordonnancement

**FIFO**

**Chronogramme d'exécution (détaillé)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| P1 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| PRET |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P2 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| PRET |  |  | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P3 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| PRET |  |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P4 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  | |  | |  |
| PRET |  |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P5 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  |
| PRET |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | |  | |  | |  | |  | |  | |  |

**Chronogramme d'exécution (simplifié)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P1 | P1 | P1 | P2 | P2 | P2 | P2 | P2 | P3 | P3 | P4 | P4 | P4 | P4 | P4 | P5 | P5 | P5 | P5 | P5 |

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

**LIFO**

**Chronogramme d'exécution (détaillé)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| P1 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  | X | |  | |  | |  | |  | |  | |  | |  | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | |  |
| PRET |  |  | | X | | X | | X | | X | | X | | X | | X | |  | | X | | X | | X | | X | | X | | X | | X | | X | | X | | X | |  | |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| P2 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | | X | | X | |  | |  | | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| PRET |  |  | |  | |  | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P3 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| PRET |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P4 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | |  | |  | |  | |  | |  | | X | | X | |  | |  |
| PRET |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  |

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| P5 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  |
| PRET |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

**Chronogramme d'exécution (simplifié)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P1 | P2 | P2 | P3 | P3 | P2 | P2 | P2 | P1 | P4 | P4 | P4 | P5 | P5 | P5 | P5 | P5 | P4 | P4 | P1 |

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

**SJF**

**Chronogramme d'exécution (détaillé)**

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| P1 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P2 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
|  |  |  | | X | | X | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P3 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | | X | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P4 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  | |  | |  | |  | |  | |  |
|  |  |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P5 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | | X | | X | |  |
|  |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | X | | X | | X | |  | |  | |  | |  | |  | |  |

**Chronogramme d'exécution (simplifié)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P1 | P1 | P1 | P3 | P3 | P2 | P2 | P2 | P2 | P2 | P4 | P4 | P4 | P4 | P4 | P5 | P5 | P5 | P5 | P5 |

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

**SRT**

**Chronogramme d'exécution (détaillé)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| P1 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  | x | | x | | x | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
|  |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P2 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | | x | | x | | x | | x | | x | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
|  |  |  | | x | | x | | x | | x | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |

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| P3 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | | x | | x | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P4 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | x | | x | | x | | x | | x | |  | |  | |  | |  | |  | |  |
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| P5 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | x | | x | | x | | x | | x | |  |
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**Chronogramme d'exécution (simplifié)**

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| P1 | P1 | P1 | P3 | P3 | P2 | P2 | P2 | P2 | P2 | P4 | P4 | P4 | P4 | P4 | P5 | P5 | P5 | P5 | P5 |

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**Chronogramme d'exécution (détaillé)**

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| P1 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P2 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P3 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P4 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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| P5 | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | |
| ELU |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
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**Chronogramme d'exécution (simplifié)**

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2. Quelle est, de ces politiques, celle qui correspond à un temps minimal d’attente moyen par processus ?

**FIFO**

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Exercice 2 : Ordonnancement avec E/S

1 - Les processus n’attendent pas pour leurs E/S car ils ont chacun leur périphérique propre