|  |  |
| --- | --- |
| *!!!* | **Aquesta prova només la poden fer els estudiants que hagin aprovat l'avaluació contínua** |

**Fitxa tècnica de la prova de síntesi**

* No és necessari que escriguis el teu nom. Un cop resolta la prova final, només s’accepten documents en format .doc, .docx (Word) i .pdf.
* Comprova que el codi i el nom de l'assignatura corresponen a l'assignatura de què t'has matriculat.
* Temps total: 1 **hora** Valor de cada pregunta: **2/10**
* Es pot consultar material durant la prova?  Quins materials estan permesos? **Materials a l'aula**
* Es pot fer servir calculadora?  De quin tipus?
* Si hi ha preguntes tipus test, descompten les respostes errònies?  Quant?
* Indicacions específiques per a la realització d’aquesta prova de síntesi: **L'ús de materials o recursos no autoritzats (detallats anteriorment en aquest apartat) durant l'examen es considerarà una infracció greu i es penalitzarà amb una qualificació de '0' a la prova. A més, l'incompliment de les pautes establertes en els enunciats podrà comportar una reducció addicional de la nota final de la prova de síntesi.**

**Enunciats**

1. In which type of problems would you use the following programming models? Provide your answer with no more than six words each.

1. Complete the following job schedule in the table below using the EASY-backfilling policy and provide the resource utilization (as in the last question of the first assignment).

|  |  |  |  |
| --- | --- | --- | --- |
| Job Number | Arrival Time | Runtime | #CPUs |
| 1 | 1 | 2 | 4 |
| 2 | 2 | 3 | 2 |
| 3 | 3 | 4 | 1 |
| 4 | 3 | 2 | 2 |
| 5 | 4 | 1 | 5 |
| 6 | 6 | 4 | 4 |
| 7 | 7 | 3 | 3 |
| 8 | 7 | 8 | 1 |
| 9 | 7 | 1 | 2 |
| 10 | 8 | 5 | 2 |

Fill the necessary gaps with the job numbers (the schedule for jobs 1-5 is already provided).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time\CPU# | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| CPU 1 | 1 | 1 | 3 | 3 | 3 | 3 |  |  |  |  |  |  |  |  |  |
| CPU 2 | 1 | 1 | 4 | 4 | 5 |  |  |  |  |  |  |  |  |  |  |
| CPU 3 | 1 | 1 | 4 | 4 | 5 |  |  |  |  |  |  |  |  |  |  |
| CPU 4 | 1 | 1 |  |  | 5 |  |  |  |  |  |  |  |  |  |  |
| CPU 5 |  | 2 | 2 | 2 | 5 |  |  |  |  |  |  |  |  |  |  |
| CPU 6 |  | 2 | 2 | 2 | 5 |  |  |  |  |  |  |  |  |  |  |

**Resource utilization = %**

1. Assuming that the Cuda kernel is correct, and all the necessary libraries have been included. Will this code print the expected result? If it does not, explain how to correct it. Give your answer in no more than ten words.

Text

Description automatically generated

1. Assuming that "eimtarqso" cluster was composed of 6408 nodes, each equipped with 112 cores. How should you write an SGE script if you need to use all the cores of 128 nodes but want to spawn just a process per node for running an MPI+OpenMP application?
2. Explain when, in OpenMP:

(a) the dynamic scheduling policy typically provides better results (i.e., shorter execution time) than the static scheduling policy

(b) the static scheduling policy typically provides better results than the dynamic scheduling policy.

Do not use more than 10 words for each one.