MNHACK24: 6th MareNostrum Hackathon

Objectives

MNHack is an opportunity for HPC application developers and/or users to deploy, test, port, and/or optimize their codes in the newest European pre-exascale cluster. This is not a competitive hackathon, instead, MNHack aims to help HPC users develop and optimize their codes. For this reason, the sixth edition of the Marenostrum Hackathon (6th MNHack) will count on an extraordinary team of mentors and experts ready to assist the participants. Mentors will be assigned to the participants depending on their needs and requirements of programming models, tools, or systems. In this regard, participants are expected to bring an application to develop, optimize, or analyze.

Participants will get access to the resources of the new Marenostrum 5 depending on their needs, general-purpose or accelerated computing.

In general terms, experts can advise on, among others, BSC technologies such as Extrae, Paraver, Dimemas, OmpSs, and OmpSs-2, as well as programming models CUDA, MPI, OpenMP, OpenACC, and HIP. The event also counts on mentors for system dev-ops.

You can participate individually or in a team of up to 4 people. You just need an HPC application and to be ready to have a whale of a time.

Important Information

- Registration deadline: 23 September 2024
- Notification of acceptance: by 30 September 2024 (we will try to review it as soon as possible after your submission).
- Date: 7/Oct/2024 Time: 09:00 - 9/Oct/2024 Time: 18:00
- Place: BSC Building Auditorium (Floor -1)
- Teams: Up to four people.
- Mentors and experts: Provided by BSC and third-party institutions.
- Cost: Free of charge.
- Contact: mnhack[at]bsc.es.

Topics

We can help optimize applications using a variety of programming models. If your proposal is selected, we will make sure we have the right mentors for you. Note that this is not a GPU-only hackathon.

Participants will have access to the resources of the general-purpose or GPU partition of the MareNostrum 5 supercomputer. They will use, among others, the technologies of the BSC Extrae, Paraver, Dimemas, OmpSs, OmpSs-2, OmpSs-2 @ OpenACC, and OmpSs-2 @ Cluster.

Furthermore, we will count on experts who can help teams work on their codes. In general terms, experts can advise on:

· Programming models: CUDA, MPI, OpenMP, OpenACC, OmpSs-2, and HIP.

· Tools: Extrae/Paraver (performance analysis), Dynamic Load Balance, Parallelware (analyzer, trainer), Linaro DDT (parallel debugging).

· Systems dev-ops.

Technical talks

- "Energy monitoring of HPC/AI workloads with EAR in MN5" by Julita Corbalan (BSC)
- "NVIDIA Grace Superchip: HW and SW deep dive" by Filippo Spiga (Nvidia)
- Debugging parallel codes and ensuring program correctness with Linaro DDT" by Rudy Shand (Linaro)

BSC's Organizing Committee

- Steering Committee: Antonio J. Peña (chair), Marta García, and David Vicente.
- General Chairs: Sergio Iserte and Julián Morillo.
- Review Committee: Muhammad Usman, Oriol Lehmkuhl, and Xavier Teruel.

Agenda

	Monday	Tuesday	Wednesday
9:00 AM	Welcome		
9:30 AM	HPCNow!		
10:00 AM			
10:30 AM		Debugging with DDT	Nvidia GH200 Superchip
11:00 AM		POP	
11:30 AM		NSYS2PRV	
12:00 PM	Lunch (Bar FIB)		
12:30 PM			
1:00 PM			
1:30 PM			
2:00 PM			
2:30 PM			
3:00 PM	Energy Management with EAR		
3:30 PM			
4:00 PM	Break (BSC Terrace)		
4:30 PM	ODOS		
5:00 PM			
5:30 PM			Farewell
6:00 PM			
6:30 PM			
7:00 PM			
7:30 PM			
8:00 PM		Social dinner (Upper Diagonal)	
8:30 AM			
9:00 PM			
9:30 PM			
10:00 PM			

Hacking time
Plenary talks
Technical talks
Networking

BSC will assume the costs of coffee breaks, lunch & dinner for each of the attendees of BSC's side. As such, said attendees agree to renounce the corresponding per diem expenses.

Sponsors

HPC Now!

Do IT Now Alliance