

## Exercise Sheet 11

### Exercise 1 (Cluster Computing)

1. Give a short definition of **Cluster Computing**.
2. What is a **Cluster of Workstations**?
3. Give an **advantage** and a **drawback** of Clusters, which follow the **Glasshouse** installation concept.
4. Give an **advantage** and a **drawback** of Clusters, which follow the **Campus-wide** installation concept.
5. What is the **objective** of High Availability Clustering?
6. By which approach does High Availability Clustering achieve its **objective**?
7. What is the functioning of an **Active/Active-Cluster**?
8. What is the functioning of an **Active/Passive-Cluster**?
9. What is the meaning of **Failover**?
10. What is the meaning of **Failback**?
11. What causes a **Split Brain**?
12. What is the result of a **Split Brain**?
13. What is the **objective** of High Performance Clustering?
14. Give an **advantage** and a **drawback** of High Performance Clusters, compared with supercomputers (mainframes).
15. What is a **Beowulf Cluster**?
16. What is the difference of a **Beowulf Cluster** in contrast to a **Wulfpack Cluster**?
17. What is the **objective** of High Throughput Clustering?
18. Can High Throughput Clusters be used to process the same **tasks** as High Performance Clusters?

## Exercise 2 (Grid Computing)

1. Give a short definition of **Grid Computing**.
2. What is an **Intra-Grid**?
3. What is an **Extra-Grid**?
4. What is an **Inter-Grid**?
5. **Industry projects** usually use(d) ...  
 Intra-Grids       Extra-Grids       Inter-Grids
6. **Research projects** usually use(d) ...  
 Intra-Grids       Extra-Grids       Inter-Grids

## Exercise 3 (Grids and Clouds)

1. **Physical resources** are offered in ...  
 Grids       Clouds
2. **Virtualized resources** are offered in ...  
 Grids       Clouds
3. **Full-automatization** (*industrialized IT*) is an attribute of ...  
 Grids       Clouds
4. **Weak automatization** (*traditional IT*) is an attribute of ...  
 Grids       Clouds
5. **Virtual Organizations** are implemented in ...  
 Grids       Clouds
6. **Resources without central control** are usually connected in ...  
 Grids       Clouds
7. **Resources under central control** are usually connected in ...  
 Grids       Clouds
8. **Consumption-based billing** (Pay-as-you-go principle) is an attribute of ...  
 Grids       Clouds

## Exercise 4 (UNICORE)

1. Create an UNICORE site (e.g. via the UNICORE Live CD [1]) and start a simple ray tracing job with the Persistence of Vision Ray Tracer (POV-Ray) via the UNICORE Rich Client.
2. Present the UNICORE site and the running POV-Ray job live during the exercise session.

[1] <http://www.unicore.eu/download/unicore6/>

## Exercise 5 (Merry Christmas + Happy New Year)

