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Q.1 Compare between Dual-core and Quad-core.

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| **Dual-core** | **Quad-core** |
| It consists of 2 cores, each designated to perform a specific task. | It consists of 4 cores which give the ability to perform multiple jobs concurrently. |
| Resource-efficient as it uses less power as compared to Quad-core systems. | Resource utilization is more as compared to dual-core because the number of cores is more. |
| The clock speed and computation capability are slower than Quad-core. | It is much faster than dual-core systems and computational efficiency is high. |
| Parallel processing capability is not available in these processors. | It has 4 cores which give it the capability of parallel computing. |
| The graphic support of the dual-core system is weak and it cannot run heavy graphics. | The graphic support of the quad-core system is high and it is used to run heavy graphics. |
| The hardware of these processors does not get heated as they produce little heat. | Heat ejection is high and due to this, these processors make the hardware gets heated. |
| The performance of dual-core processing systems is good. | The performance of dual-core processing systems is better. |

Question 2. Intel family (i5 and i7).

Intel's i5 and i7 families are both part of the Intel Core processor lineup, offering different levels of performance and features. Here's a comparison between the two:

1. **Performance**: Generally, i7 processors offer higher performance compared to i5 processors. This is due to factors like higher clock speeds, more cores, and larger cache sizes typically found in i7 CPUs.
2. **Cores and Threads**: i7 processors often come with more cores and threads compared to i5 processors. This means they can handle more simultaneous tasks and multithreaded applications more efficiently.
3. **Cache Size**: i7 processors usually have larger cache sizes, which helps in faster data access and improves overall performance, especially in tasks that require frequent access to memory.
4. **Hyper-Threading**: Most i7 processors support Hyper-Threading, which allows each core to handle two threads simultaneously, effectively doubling the number of threads. This can significantly improve performance in multithreaded applications.

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1. **Price**: i7 processors are generally more expensive than i5 processors due to their higher performance and additional features. If budget is a concern, i5 processors may offer a better value proposition for users who don't require the highest level of performance.
2. **Thermal Design Power (TDP)**: i7 processors often have a higher TDP compared to i5 processors, meaning they may consume more power and generate more heat under heavy loads. This can affect the choice of cooling solutions and overall system design.
3. **Integrated Graphics**: Some i7 processors come with integrated graphics, while others require a separate discrete graphics card for display output. i5 processors also come in both configurations. The presence or absence of integrated graphics can impact the overall cost and system configuration.