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Dynamic scheduling in timetable automation poses a significant challenge for educational institutions, which requires adaptability and efficiency. This paper proposes a multi-agent system (MAS) using the Java Agent Development Framework (JADE) integrated with Deep Reinforcement Learning (DRL). This system consists of autonomous agents responsible for resource management such as courses, rooms and instructors. Using DRL, agents can learn from historical data and adjust schedules in real time, greatly reducing conflicts and improving resource utilization. The experimental results show that the integration of JADE with DRL improves system adaptability and allows for efficient and autonomous scheduling with minimal human intervention.