

## Review Session 3

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An investor has to decide about the money she wants to invest in the projects A, B, C, and D. Each project is available one time only. At the decision time, the investor has \$1,000,000. The cash flow of the projects can be seen in the following table:

project	A	B	C	D
Period 0	-600	-500	-500	-400
Period 1	0	150	600	0
Period 2	0	150	0	200
Period 3	200	150	0	200
Period 4	300	150	0	200
Period 5	510	150	0	0

cash flow of projects [in \$1,000]

1. Formulate an appropriate LP model to maximize the net present value of the projects chosen. Assume a discount rate of 10%. (Note: It is possible to invest in a project partially.)
2. Formulate an appropriate LP model to maximize the money held at the end of period 5. Assume that money returned from investments can be reinvested for 12% per period at a bank.
3. Solve both models using the Solver.
4. A bank offers a credit of up to \$100,000 to the investor for an annual interest rate of 14%. The credit must be paid back at the end of period 5. Without resolving the model, decide whether it is beneficial to take that credit in the end value maximization case or not. Why?
5. (Disregard previous point) What would happen if the investor is not allowed to take a project partially, so she only has the options to finance a project completely or not invest in it at all. Solve the new problems for both the net value and the end value variant.