# Introduction to Market Design

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# Motivating examples

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  For example: allocating courses to students, houses to tenants in public housing programs, and allocating spaces in public facilities.

# Motivating examples

- Think of the problem of allocating objects to agents.
- In some environments monetary transfer is impossible.
  For example: allocating courses to students, houses to tenants in public housing programs, and allocating spaces in public facilities.
- In all of these examples **only** one side has preferences over the other side.

# Set up

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- Agents have preference order over objects.
- They communicate their preferences with the designer. From the revelation principle we restrict to direct revelation mechanisms.
- The designer decides how to allocate the objects to agents.
- There are several mechanisms in use.

# Important features of mechanisms

- Incentives.

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- Efficiency.
  Pareto efficiency.

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- Incentives.
- Efficiency.
  Pareto efficiency.
- Envy or Equity.

# Serial dictatorship

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# Serial dictatorship

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- A variation of this mechanism is used in Sharif.

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# Probabilistic serial mechanism

- This version satisfies the strong version of Envy and efficiency criteria.
- This mechanism satisfies the weak version of incentive criterion.
- This mechanism is an invention of Economists.
- An example that shows why PS is more efficient than RP.
- These two mechanisms coincide in large assignment problems.

# Top trading cycle mechanism

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# Top trading cycle mechanism

- This mechanism satisfies the incentive criterion and is pareto efficient.
- It is widely used in kidney exchange. (Not relevant to Iran)

# Competitive equilibrium from equal income

- Widely used in Business Schools in America.

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