PROBLEM FORMULATION IV (CONTD.)
(EITHER-OR- CONSTRAINTS)

CONSIDER THE PROBLEM WHERE ONE IS SCHEDULING DIFFERENT PROJECTS (LIKE SITES FOR MAINTENANCE) SINCE THE RESOURCES (LIKE LABOUR & EQUIPMENT) ARE FIXED, ONCE A PROJECT (OR A PART) HAS STARTED ANOTHER CANNOT START. FOR THE OTHER TO START FIRST THE CURRENT JOB (OR ITS CRITICAL PART) HAS TO FINISH.

THE DECISION VARIABLE IS "WHEN TO START PROJECT i." LET THIS BE x_i.

FURTHER LET US ASSUME THAT THE TIME TAKEN TO COMPLETE PROJECT i IS a_i

THIS IMPLIES THAT IF i IS TAKEN UP BEFORE j (i.e. WHEN $x_i < x_j$) THEN

$$x_j - x_i \geq a_i \quad \ldots\ldots \quad (1)$$

HOWEVER if j IS TAKEN UP BEFORE i THEN

$$x_i - x_j \geq a_j \quad \ldots\ldots \quad (2)$$

AS YOU CAN SEE CONSTRAINTS (1) AND (2) ARE NOT APPLICABLE AT THE SAME TIME.

EITHER (1) OR (2) IS APPLICABLE

THE PROBLEM THEN IS TO FIND OUT HOW TO PLACE BOTH THE CONSTRAINTS, YET MAKE ONLY ONE OR THE OTHER EFFECTIVE AT A GIVEN TIME. THAT IS, AT A TIME ONE IS EFFECTIVE AND THE OTHER REDUNDANT.