Integer Programming	
Invest at most two projects among A, B, C, D	$A + B + C + D <= 2$
Invest at least two projects among A, B, C, D	$A + B + C + D >= 2$
Not in both A and B	$A + B <= 1$
A and B must be selected together or not	$A = B$
B must be combined with A	$B <= A$
C must be combined with A and/or B	$C <= A + B$
C must be combined with both A and B	$2C <= A + B$
Must choosing from A, B, C more than choosing from D, E, F	$D + E + F <= A + B + C$
If select 2 or more in {A, B, C}, then at least 1 in {D, E, F}	$A + B + C - 1 <= 2 * (D + E + F)$
Auxiliary Binary Variables	
With a binary variable to indicate whether choose A	$y<=M * x$ y: production x: indicator
With a binary variable to encode the maximum production of A	$y<=md * x$ y: maximum production x: indicator
Either at least of one of projects A, B, C Or at least two of projects B, D, E	$A + B + C >= 1-M*Z$ $B + D + E >= 2-M(1-Z)$
	$A + B + C >= 1-M*Z_1$ $B + D + E >= 2-M(1- Z_2)$ $Z_1 + Z_2 <= 1$
Either the cost of A, B, C is smaller than 100, or the cost of D, E is smaller than 100	$A + B + C <= 100 + M*Z$ $D + E <= 100 + M*(1-Z)$
Either at least one of the projects A, B, C is selected, or two of projects B, D, E are selected	$A + B + C >= 1-M*Z$ $B + D + E >= 2 - M(1-Z)$ $B + D + E <= 2 + M(1-Z)$
Suppose you have N sets of inequalities and you want to K of them to be satisfied. $A + B + C + D + E >= 10000$ At least 3 out of them are larger than 2500	$A + B + C + D + E >= 10000$ $A >= 2500-M*Z_1$ $B >= 2500-M*Z_2$ $C >= 2500-M*Z_3$ $D >= 2500-M*Z_4$ $E >= 2500-M*Z_5$ $Z_1 + Z_2 + Z_3 + Z_4 + Z_5 <= 2 (n-k)$
	$A + B + C + D + E >= 10000$ $A >= 2500-M*(1-Z_1)$ $B >= 2500-M*(1-Z_2)$ $C >= 2500-M*(1-Z_3)$ $D >= 2500-M*(1-Z_4)$ $E >= 2500-M*(1-Z_5)$ $Z_1 + Z_2 + Z_3 + Z_4 + Z_5 >= 3 (k)$
A can be either 30,75 or 90	$A = 30Z_1 + 75Z_2 + 90Z_3$ $Z_1 + Z_2 + Z_3 = 1$

Integer Programming	
If more than 4 in {A, B, C, D, E} are chosen, lose 4 revenue	Maximize 2A + 2B + 2C + 2D + 2E - 4Z Z >= A + B + C + D + E - 4