

## INTEGER PROGRAMMING

# The Endangered Species of Int

ZXC is the acronym for the Nature Conservancy in the Kingdom of Int. Int is in the process of rapid development and ZXC is fighting a last ditch battle to preserve habitat and biodiversity in the kingdom.

As a first step, ZXC has identified 12 pristine sites which are up for sale. ZXC has also drawn up a species list for each site, as shown in **Table 1**. This list shows the presence or absence at each site of the 14 unique endangered species in Int.

**Table 2** shows the price of each site.

ZXC is planning a fund-raising campaign to collect sufficient money to purchase enough of these sites to ensure habitat for all of the 14 endangered species. Your task is to tell ZXC the minimum amount of money that would do this, and which sites to buy.

**Table 1:** Endangered species list for 12 sites

Site #	Species #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1		0	1	1	0	0	0	0	1	0	0	1	0	0	0
2		0	1	0	0	0	0	1	1	0	0	0	1	0	0
3		1	1	1	0	0	1	1	0	1	0	1	0	0	1
4		0	0	1	1	0	1	0	0	1	1	0	0	0	1
5		1	1	0	0	0	1	1	0	1	1	0	1	0	0
6		1	0	1	1	1	0	0	0	0	1	1	1	0	0
7		0	1	1	0	0	0	0	1	1	0	0	0	1	0
8		1	0	1	0	1	0	0	1	0	1	0	0	1	0
9		0	0	1	1	0	0	0	0	1	0	0	0	0	1
10		0	1	1	0	0	0	1	0	1	1	1	0	0	0
11		1	1	0	0	0	0	0	1	0	0	0	1	0	1
12		1	0	1	1	1	0	0	0	0	0	0	0	1	0

**Table 2:** Price (in millions of \$\$) for each site

<b>Site #</b>	1	2	3	4	5	6	7	8	9	10	11	12
<b>Price</b>	<b>10</b>	<b>6</b>	<b>15</b>	<b>5</b>	<b>17</b>	<b>7</b>	<b>5</b>	<b>11</b>	<b>8</b>	<b>18</b>	<b>12</b>	<b>9</b>