

The Great Computer Challenge

JAVA

Level IV



State Names and Abbreviations

20 Points

Your English class has decided to improve their letter-writing skills by writing to pen pals in other states. The problem is that your classmates keep forgetting the abbreviations for the various states.

Your club decides to create an application that will allow a student to enter either the state name or abbreviation. It should then display the opposite value, either an abbreviation or a state name.

Ex. Please Enter Search Value:
CO

Your State is Colorado

Abbreviation	State Name	Abbreviation	State Name
AL	Alabama	HI	Hawaii
AK	Alaska	ID	Idaho
AS	American Samoa	IL	Illinois
AZ	Arizona	IN	Indiana
AR	Arkansas	IA	Iowa
CA	California	KS	Kansas
CO	Colorado	KY	Kentucky
CT	Connecticut	LA	Louisiana
DE	Delaware	ME	Maine
DC	District of Columbia	MD	Maryland
FL	Florida	MA	Massachusetts
GA	Georgia	MI	Michigan
GU	Guam	MN	Minnesota
MS	Mississippi	PR	Puerto Rico
MO	Missouri	RI	Rhode Island
MT	Montana	SC	South Carolina
NE	Nebraska	SD	South Dakota
NV	Nevada	TN	Tennessee
NH	New Hampshire	TX	Texas

Abbreviation	State Name	Abbreviation	State Name
NJ	New Jersey	TT	Trust Territories
NM	New Mexico	UT	Utah
NY	New York	VT	Vermont
NC	North Carolina	VA	Virginia
ND	North Dakota	VI	Virgin Islands
OH	Ohio	WA	Washington
OK	Oklahoma	WV	West Virginia
OR	Oregon	WI	Wisconsin
PA	Pennsylvania	WY	Wyoming

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Hex is On

40 Points



The year is **4047** and archaeologists have made a discovery that may forever alter the way they perceive the early members of the species, Homo sapiens. After close examination of the written artifacts that they discovered, they have determined that the ancient people who wrote these documents use an unusual numbering system made up of the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. They have coined a name for this new numbering system and now refer to it in scientific journals as the decimal system. Although they are puzzled why the ancient people would employ such a crude system, they are interested in exploring the relationship between this system and the two most common systems in current use. These systems are binary, and hexadecimal. The binary system as the name suggests is base 2 (0, 1), while the hexadecimal system is base 16 (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F). This is point at which you come into to picture.

Create a Java applet that allows the user to convert from one base to another. The following is a sample of the interface:

A screenshot of a Java applet window titled "Hex2". The window has a menu bar with "Info", "Start", "Stop", and "Exit" buttons. The main content area is titled "Hex/Decimal Calculator" in a blue box. Below this, there are two sections for selecting input and output data types. The "Select Input Data Type" section has three radio buttons: "Hex", "Decimal" (which is selected), and "Binary". Below this is a text input field labeled "Enter A Number:" containing the value "255". The "Select Output Data Type" section has three radio buttons: "Hex" (which is selected), "Decimal", and "Binary". Below this is a "Convert" button. At the bottom, there is an "Exit" button, a "Result" label, a text input field containing "FF", and a "Clear" button.

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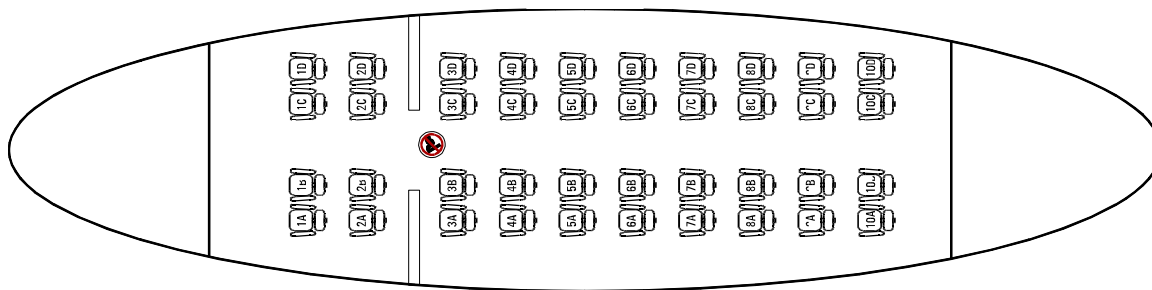


Armadillo Air

40 Points



Armadillo Air, a fledgling subsidiary of Auckland Airlines has initiated domestic flights from Norfolk to selected U.S. cities. No expense had been spared to guarantee that the first day of operations would be truly a historic event. Upon entering the terminal one was immediately surrounded by an overabundance of wine and exotic food from around the world. Adding to the festive atmosphere was the music provided by only the finest of bands. The fact that the Rolling Stones were booked as an opening act is an indication of the quality of performing artists. The celebration ceased when the Auckland executives arrived. They, because of their keen business sense, noticed certain problems that had been overlooked by the local staff. They could accept the fact that this new airline lacked flight attendants, pilots and even planes, but they insisted that all airlines under their control should have a reservation system. Your task is to create this reservation system.



Display a two dimension array to represent the seat locations. There should be four rows identified by the letters A, B, C, D, and ten columns identified by the digits 1 through 10. The following is provided as an example:

1D	2D	3D	4D	5D	6D	7D	8D	9D	10D
1C	2C	3C	4C	5C	6C	7C	8C	9C	10C
1B	2B	3B	4B	5B	6B	7B	8B	9B	10B
1A	2A	3A	4A	5A	6A	7A	8A	9A	10A

The passenger should be asked to enter their name, the number of seats desired and the seat location(s). After this has been entered for a passenger, the screen should be redisplayed with a special character or characters replacing the original seat identifiers. These seats are then occupied, and can not be reserved by future passengers.

Your program should allow up to five passengers to enter their information. When a passenger enters a seat location that has already been reserved this request should be rejected.

The following represents one processing of one passenger:

Ex.

1D	2D	3D	4D	5D	6D	7D	8D	9D	10D
1C	2C	3C	4C	5C	6C	7C	8C	9C	10C
1B	2B	3B	4B	5B	6B	7B	8B	9B	10B
1A	2A	3A	4A	5A	6A	7A	8A	9A	10A

Please Enter Your Name:

Bob Smith

Please The Number of Seats Desired:

2

Please Enter the Seat Number 1:

2A

Please Enter the Seat Number 2:

2B

1D	2D	3D	4D	5D	6D	7D	8D	9D	10D
1C	2C	3C	4C	5C	6C	7C	8C	9C	10C
1B	**	3B	4B	5B	6B	7B	8B	9B	10B
1A	**	3A	4A	5A	6A	7A	8A	9A	10A