



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

C#



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

ARRAYS

OBJECT ARRAYS

ARRAYS OF OBJECTS

- So far, we have looked at arrays of primitive datatypes; Strings, characters and numbers
- How can we make more complex arrays?
- One way is by using arrays of objects
- Because windows forms comes with a library of objects, we can use these objects to build our array

ARRAYS OF OBJECTS

- We are going to be building a Battleship which will use a picture box array.
- In our Battleship, each seat will be represented by one of four images, when empty the image will have a water background, or a ship and when full the image will have an either a miss image or a hit image.



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

OBJECT ARRAYS

PICTUREBOX (PB)

ARRAYS OF OBJECTS - PB

- First, we must figure out how to dynamically add our picture boxes
- A few steps to figure this out are:
 - Figure out how to instantiate a new object in C#
 - Add the properties when you instantiate the object
 - Figure out how to add a new object to the form dynamically
 - Hint
(this.controls.someCoolFunctionThatAddsThingsToTheForm(ThingIWantToAdd))
 - If you have issues, go to google and try to find how to add a picturebox into a windows form dynamically



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

ARRAYS OF OBJECTS - PB

```
PictureBox[,] economy = new PictureBox[10, 10];  
1 reference  
private void Form1_Load(object sender, EventArgs e)  
{  
    int xpos = 45;  
    int ypos = 45;  
    for (int i = 0; i < economy.GetLength(0); i++)  
    {  
        for (int j = 0; j < economy.GetLength(1); j++)  
        {  
            economy[i, j] = new PictureBox  
            {  
                Name = "picturebox" + i.ToString(),  
                Location = new Point(xpos, ypos),  
                Size = new Size(43, 43),  
                Visible = true,  
                BackColor = Color.Black  
            };  
            this.Controls.Add(economy[i, j]);  
            xpos += 45;  
        }  
        xpos = 45;  
        ypos += 45;  
    }  
}
```

You can call this
playerboard and
computerboard
for each
Gameboard

This is where we
are instantiating
the
PictureBoxObject



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

ARRAYS OF OBJECTS - PB

- Instantiation in a different way:

```
int xpos = 45;
int ypos = 45;
for (int i = 0; i < economy.GetLength(0); i++)
{
    for (int j = 0; j < economy.GetLength(1); j++)
    {
        economy[i, j] = new PictureBox();
        economy[i, j].Name = "picturebox" + i.ToString();
        economy[i, j].Location = new Point(xpos, ypos);
        economy[i, j].Size = new Size(43, 43);
        economy[i, j].Visible = true;
        this.Controls.Add(economy[i, j]);
        economy[i, j].BackColor = Color.Black;
        xpos += 45;
    }
    xpos = 45;
    ypos += 45;
}
```

This is where we
are instantiating
the
PictureBoxObject



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

ARRAYS OF OBJECTS - PB

- Adding a picture box:

```
int xpos = 45;
int ypos = 45;
for (int i = 0; i < economy.GetLength(0); i++)
{
    for (int j = 0; j < economy.GetLength(1); j++)
    {
        economy[i, j] = new PictureBox();
        economy[i, j].Name = "picturebox" + i.ToString();
        economy[i, j].Location = new Point(xpos, ypos);
        economy[i, j].Size = new Size(43, 43);
        economy[i, j].Visible = true;
        this.Controls.Add(economy[i, j]);
        economy[i, j].BackColor = Color.Black;
        xpos += 45;
    }
    xpos = 45;
    ypos += 45;
}
```

this is a reference to the
form1 class, to translate it
would be
form1.controls.Add(MyBox)
This adds MyBox to form1



INSTITUTE OF
TECHNOLOGY
DEVELOPMENT
OF CANADA

475 GRANVILLE STREET, VANCOUVER, BC, V6C 1T1
PHONE: +1(604)558-8727, +1(604)409-8200
TOLL FREE: +1(888) 880-4410
FAX: +1(888) 881-6545
WEB: WWW.ITDCANADA.CA
EMAIL: STUDYING@ITDCANADA.CA

ARRAYS OF OBJECTS – PB OUTPUT

