COMP30019 – Graphics and Interaction

Lab 2:
Transformations and User Input

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Transformations

- In Unity, each entity in the scene has a transform component, comprising of:
  - **Position** – Vector3
  - **Rotation** – Quaternion
  - **Scale** – Vector3

Translation

Set object position to x=1, y=0, z=0…

```
this.transform.localPosition = new Vector3(1.0f, 0.0f, 0.0f);
```

Translate object 1 unit in the x-axis…

```
this.transform.localPosition += new Vector3(1.0f, 0.0f, 0.0f);
```

Rotation

Set object rotation to be 90 degrees around the y-axis…

```
this.transform.localRotation = Quaternion.AngleAxis(90.0f,
                                                    Vector3.up);
```

Rotate object 90 degrees around the y-axis…

```
this.transform.localRotation *= Quaternion.AngleAxis(90.0f,
                                                     Vector3.up);
```

Scale

Set object to be double its original size in all axes…

```
this.transform.localScale = new Vector3(2.0f, 2.0f, 2.0f);
```

Double the size of the object in all axes…

```
this.transform.localScale *= 2.0f;
```

User Input

- Often we want user input to *apply* transformations objects in the scene – most obviously a player object.
- For instance, the ‘W’, ‘S’, ‘A’, ‘D’ keys could be programmed to translate (move) the player in the X-Y plane.

Keyboard Input

```
Input.GetKey(KeyCode.UpArrow)
Input.GetKeyDown(KeyCode.UpArrow)
Input.GetKeyUp(KeyCode.UpArrow)
```

Mouse Input

```
Input.GetMouseButton(0)
Input.GetMouseButtonDown(0)
Input.GetMouseButtonUp(0)
Input.mousePosition
```

Demonstration…