A **Reference Variable** simple means a **variable**allocated memory statically **in the** stack at compile time. ... In **Java** an **object is** allocated memory dynamically in heap. A call to the default constructor creates an **object** of the class in heap memory.

Difference between reference variable and object

GUI g1 = new GUI();

// g1 is a reference to an object of GUI class.

GUI g2;

// g2 is a reference that can point to an object of GUI class

// but currently not pointing to any.

The only difference b/w g1 and g2 is that g1 is initialized with an object but g2 points to null

g2 = g1;

// it means g2 will point to the same object g1 is pointing to

// only one object but two references.

References are sort of pointers to a block of memory called objects.

GUI g1 = new GUI();

For explanation, let me break the above statement.

GUI g1;

g1 = new GUI();

1st step: g1 is a reference variable (pointer), not yet pointing to any valid memory location.

2nd Step: The second step allocates the memory for object of class GUI and the assignment operation make the reference variable g1 point to this object (memory location). The new keyword allocates the memory for the object of class GUI.