

### **Module file:**

```
module halfsub(A,B,Diff,Borw);  
input A,B;  
output Diff,Borw;  
assign Diff=A^B;  
assign Borw=(~A)&B;  
endmodule
```

### **Test Bench:**

```
module main;  
reg A,B;  
wire Di,Bo;  
halfsub ab(A,B,Di,Bo);  
initial begin  
#10 A=0;B=0;  
#10 A=0;B=1;  
#10 A=1;B=0;  
#10 A=1;B=1;  
end  
initial begin  
$monitor("time=%d,A=%b,B=%b,Diff=%b,Borrow=%b\n",$time,A,B,Di,Bo);  
end  
endmodule
```

### **Output:**

```
time=          0,A=x,B=x,Diff=x,Borrow=x  
  
time=          10,A=0,B=0,Diff=0,Borrow=0  
  
time=          20,A=0,B=1,Diff=1,Borrow=1  
  
time=          30,A=1,B=0,Diff=1,Borrow=0  
  
time=          40,A=1,B=1,Diff=0,Borrow=0
```