Module file:

```
module halfadder(A,B,Sum,Carry);
input A,B;
output Sum,Carry;
assign Sum=A^B;
assign Carry=A&B;
endmodule
```

Test Bench:

```
module main;
reg A,B;
wire Su,Ca;
halfadder ab(A,B,Su,Ca);
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
$monitor("time=%d,A=%b,B=%b,Sum=%b,Carry=%b\n",$time,A,B,Su,Ca);
end
endmodule
```

Output:

```
time=                   0,A=x,B=x,Sum=x,Carry=x

time=                  10,A=0,B=0,Sum=0,Carry=0

time=                  20,A=0,B=1,Sum=1,Carry=0

time=                  30,A=1,B=0,Sum=1,Carry=0

time=                  40,A=1,B=1,Sum=0,Carry=1
```