

Year 9 Python Help Sheet – Selection (IF Statements)

Simple IF statements (two possible outputs)

We sometimes want our programs to do different things based on other actions, often depending on what is entered by a user. To do this we can use IF statements. For example:

```
age = int(input("Enter your age: "))
if age >= 18:
    print("You are old enough to vote.")
else:
    print("You are not old enough to vote.")
```

This would ask the user to enter an age. **If** the number entered was **greater than or equal to 18** will print "You are old enough to vote.", otherwise (**else**) it will print "You are not old enough to vote."

IF statements with multiple possible outputs

Sometimes there may be more than two possible outputs. For example, let's say that the marks for a music exam are 90 for a distinction, 70 for a merit and 50 for a pass. This gives 4 possible outputs: distinction, merit, pass or fail. The code would be:

```
marks = int(input("Enter the mark: "))
if mark >= 90:
    print("Distinction")
elif mark >= 70:
    print("Merit")
elif mark >= 50:
    print("Pass")
else:
    print("Fail")
```

Look at the code above. **If** the number entered is **greater than or equal to 90** it will print "Distinction", else if (**elif**) the number is **greater than or equal to 70** it will print "Merit", else if (**elif**) the number is **greater than or equal to 50** it will print "Pass", **else** it will print "Fail"

Combining IF statements with loops

By combining if statements and a while loop it is possible to create a higher/lower game as shown below:

```
import random
randnum = random.randint(1,100)

guess = int(input("Enter your guess: "))

while guess != randnum:
    if guess > randnum:
        guess = int(input("Too high. Try again: "))
    else:
        guess = int(input("Too low. Try again: "))

print("Well done")
```

Look at the code carefully. The second line generates a random number between 1 and 100. It then asks the player to guess number. If the guess is not equal to (!=) the random number, it will say if it is too high or too low and ask for another guess. This loop will continue until the number is guessed at which point the while loop will finish and the last line will run.