COMP30500 DS&A Part B Assignment 3

by Neil Grogan - 13204052

**Part A**

**Operation No.**

**Operation**

**Operation Result**

**Stack (bottom to top)**

**No. of Items on the Stack**

1

push(‘e’)

e

‘e’

1

2

push(‘s’)

s

‘e’,‘s’

2

3

push(‘c’)

c

‘e’,’s’,’c’

3

4

pop()

c

‘e’,’s’

2

5

push(‘u’)

u

‘e’,’s’,’u’

3

6

push(‘a’)

a

‘e’,’s’,’u’,‘a’

4

7

pop()

a

‘e’,’s’,’u’

3

8

push(‘o’)

o

‘e’,’s’,’u’,’o’

4

9

push(‘t’)

t

‘e’,’s’,’u’,’o’,’t’

5

10

pop()

t

‘e’,’s’,’u’,’o’

4

11

push(‘h’)

h

‘e’,’s’,’u’,’o’,’h’

5

**Q2.**

Word via the POP operations: *cat*

Word on the stack: *house*

**Q3. Array Based Stack:**

**Operation No.**

**Operation**

**Operation Result**

**Stack (bottom to top)**

**No. of Items on the Stack**

1

push(‘Ireland’)

Ireland

‘Ireland’

1

2

pop()

Ireland

0

3

push(‘England’)

England

‘England’

1

4

pop()

England

0

5

push(‘Wales’)

Wales

‘Wales’

1

6

pop()

Wales

0

7

push(‘Scotland‘)

Scotland

‘Scotland’

1

8

pop()

Scotland

0

9

push(‘France’)

‘France’

‘France’

1

10

push(‘Germany‘)

‘Germany‘

‘France’ ,‘Germany‘

2

**Q3. Link Based Stack:**

**Op No.**

**Operation**

**Operation Result**

**Stack (bottom to top)**

**No. of Items on the Stack**

**Top Index**

**Next**

**Index**

1

push(‘Ireland’)

Ireland

‘Ireland’

1

0

1

2

pop()

Ireland

0

null

null

3

push(‘England’)

England

‘England’

1

0

1

4

pop()

England

0

null

null

5

push(‘Wales’)

Wales

‘Wales’

1

0

1

6

pop()

Wales

0

null

null

7

push(‘Scotland‘)

Scotland

‘Scotland’

1

0

1

8

pop()

Scotland

0

null

null

9

push(‘France’)

‘France’

‘France’

1

0

1

10

push(‘Germany‘)

‘Germany‘

‘France’ ,‘Germany‘

2

1

2

Countries popped: *Ireland, England, Wales, Scotland*

Countries held: *France & Germany*